This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

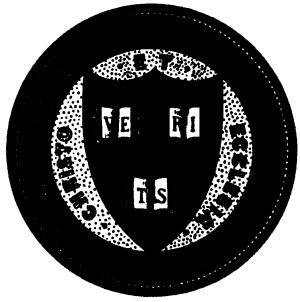
+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Q 40
G 881 t

JP



Harvard College Library

FROM

Miss Minna B. Hall

THE TREES OF OLD ENGLAND.

THE

TREES OF OLD ENGLAND.

SKETCHES

OF THE

ASPECTS, ASSOCIATIONS, AND USES OF THOSE WHICH CONSTITUTE THE FORESTS, AND GIVE EFFECT TO THE SCENERY OF OUR NATIVE COUNTRY.

BY

LEO H. GRINDON,

AUTHOR OF "LIFE, ITS NATURE, VARIETIES, PHENOMENA, PHENOMENA OF PLANT LIFE," "THE LITTLE THINGS OF NATURE," "SEXUALITY OF NATURE," ETC., ETC.

BOSTON:
T. H. CARTER AND SONS.
1868.

56,120
June 23, 1970
HARVARD COLL
DEC 3 19
LIBRARY.
Miss Minna B. Hall
Q
40
6881 x

PREFACE.

THE following chapters are reprinted *verbatim* from a Magazine which has for its chief aim the diffusion of moral and sacred truth, and is always glad to have this done through the medium of illustrations drawn from NATURE,—that second Book of God, which is everywhere a commentary upon the first and greatest. They make not the slightest pretension to a scientific character, seeking, like their forerunner on the "Little Things of Nature," simply to set forth, in a plain and easy manner, some few of the beautiful and refreshing truths connected with the foresters of Old England. If received in the kindly spirit which it is hoped they may aid in diffusing and encouraging, they may probably be followed by a second series.

Rumford-street, Manchester,
January, 1868.

CONTENTS.

	PAGE
General Qualities and Recommendations of Trees	1
Structure of Trees	3
The Oak	6
The Pine	19
The Beech	29
The Elm	37
The Lime	45
The Poplar and the Willow	55
The Yew	64
The Maple and the Sycamore	69
The Birch and the Alder	77
The Ash	85
The Mountain-Ash	91
The Chesnut	92
Summary of smaller Trees	94

NOTE AND ERRATUM.

Page 27, end. The specimen referred to was destroyed during the calamitous fire which took place December 30th, 1866.

Page 65, line 14. For chalcedony, read ruby.

THE TREES OF OLD ENGLAND.

Trees constitute an order of nobility; for nature has its aristocracy as well as mankind. If there be "ancient and noble" families in a nation or a community,—still older, and inheriting yet more dignity, are the families of living things by which man is encircled. He can claim no honour on the score of descent or genealogy that is not already merited by some patrician of the world of plants; and this not so much because Trees are the same to-day that they were in the beginning, as by reason of their absolute excellence, their serene and invulnerable perfection.

Trees are sanitary agents in the economy of the world we live in. By the process of "assimilation," which means the abstraction of carbon from the atmosphere, in order that, in due time, and through certain vital processes, it may be converted into wood and other vegetable substances,—by the process of "assimilation," we say, trees, through the medium of their leaves, preserve the air in a condition fit for human breathing. Herbaceous vegetation greatly contributes to this great end; but the result is mainly referable to arborescent plants, their size and extent of leaf-surface being so prodigiously large, when compared with that of the former kind. We little think when we inhale the fresh air, and quaff it upon the hills, like so much invisible and aërial wine, that its purity and healthfulness come of the glorious Trees. But so it is. Nor have we merely the trees of our own country to think of and be thankful to. The air that we breathe in England to-day has been purified for us perhaps a thousand miles away. If the wind blow from the north, we may be grateful to the Scandinavian birches; if from the west, it is quite possible that the magnolias of North America may have helped to strain it; if from the

south, were it gifted with language, we might hear a tale of Indian palms. Every tree in nature makes itself felt in the good it does the air,—a beautiful return for the new loveliness it receives when its branches and foliage are stirred and fluttered by the breeze.

Trees supply man with every species of useful article, whether of nourishment, or of clothing, or of medicine, and with timber whereof to construct dwellings, and to build ships, so that even the sea shall be a highway. Not that any single kind is of utility so multiform. Fruits are supplied by some, as the olive and the fig, the coco-nut and the date; the delicate inner bark of the paper-mulberry furnishes the inhabitants of the South Sea Islands with materials for their simple apparel; medicines are afforded by innumerable species, and "wood" and "tree" are words almost synonymous. It would be foolish and presumptuous to say that man could not exist without trees, because, were there no such productions in existence, the infinite Benevolence would supply his wants through some other medium. But constituted as man is, and established as Trees and their functions and properties are, it is plain that the present exquisite order and harmony of things in respect to man's welfare, are most intimately and inseparably identified with Trees. Thus, that when we would consider man and his privileges, the amenities and the enjoyments that encircle life, the comforts and the ornaments of his home, we cannot possibly do so, if we would give all things their fair place, without keeping Trees also constantly before the mind.

Trees are indispensable to the picturesque. A great mountain, or an extended plain, may have grandeur, though devoid of trees; and it is easy to conceive of richly-cultivated valleys, covered with crops of corn, or unrolling infinite reaches of green pasture, and at the same time without a tree, except a little one here and there, just sufficient to serve as a landmark. But in the absence of trees, none of these places could be *picturesque*, in the full and proper sense of the word. The trees break the outlines; they give variety of colours, movement also, and shadows, and touch the imagination with agreeable sense of fruitfulness; or if they be timber and forest-trees, with the idea of nobleness and grandeur. They are to the landscape what living and moving people are to the street, or to the interior of the hall or temple—an element that *may* be dispensed with, but at the expense of the finest and most impressive influences. We may be overpowered by the stern and solemn grandeur of a treeless waste, especially if it be composed of mountains; and the sensation is one that gives a variety not unac-

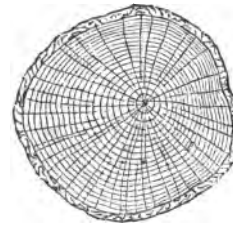
ceptable to our experiences of external nature; but the scenes that come home most closely to our sympathies, and that have a perennial hold, are those that are enriched by the abundance of their trees.

Poetry finds in trees no little of its sustenance. From the most ancient poets downwards, all verses that have immortality in them, abound more or less with allusions to trees, finding in them either images for the events—both glad and sorrowful—of human life, or emblems, in their higher nature, of what pertains to the heart and mind. The "Language of Flowers" would be incomplete did it not include the "Language of Trees," since trees are adapted, by their original and inalienable constitution, to serve as metaphors for almost everything great and good, and wise and beautiful, in human nature. Hence the countless citations of trees in Holy Writ, wherein the cedar and the fir, the vine and the olive, the palm and the fig, are a portion of the ordinary vocabulary—not mentioned arbitrarily, or as a sportive act of the fancy, but on account of their being the absolute representatives and pictured forms in the temporal world of the high and sacred realities that belong to the invisible and eternal.

Because of these admirable attributes and characters of Trees, we purpose in this series of papers to examine somewhat closely into their nature and life-history, marking out the features and physiognomy of such kinds as belong to our own island, and inquiring into the specialities that give them their several places in art and poetry. For a tree is not merely an oak, or an ash, or an elm. It has qualities for the imagination and the heart, moving men in its own way, and vindicating prerogatives that are peculiar to it. The mind of the man who in his youth was accustomed to contemplate oaks, grows up very differently from that of him whose boyhood was spent near pines and firs. Where evergreen trees prevail, and are a daily spectacle, a very different frame of mind is induced compared with that which exists where the branches are leafless throughout the winter. As the stars and planets, from the inaccessible altitude of their sweet lustre, make the heart great by the contemplation of them; so, after the same manner, imposing and magnificent trees, whose branches, when we go beneath, seem the clouds of a green heaven, have a power of ennobling and elevating the soul, such as all who have lived among them are more or less clearly conscious of, and which is totally unpossessed by small ones.

In England, the trees are all of the class called "exogenous," that is to say, they have numerous and spreading branches; the leaves, when

held between the eye and the light, are found to be marked in every portion by a delicate net-work of green lines, technically called the "veins"; and upon the outside of the trunk there is bark, which can be removed like the peel of an orange. When one of these exogenous or branching trees is cut down, or if a branch be lopped off, the exposed surface, on being polished horizontally, shows elegant concentric circles, surrounding a central point, which in young parts of the tree indicates a column of living pith. The concentric circles announce the age of the tree or branch, which usually is just as many years old in that part as there are rings. In its earliest stage, or while only in its first season of growth, the stem of the seedling tree consists only of pith and an enclosing skin. Woody matter is gradually prepared, and this becomes deposited in a layer between the pith and the skin, which latter now assumes the solidity of bark; and should the stem be cut through at Christmas, or at the end of its first year, the first of these annual



Section of Exogenous Stem.

rings will be plainly visible. Every successive year this process is repeated. With the opening of the leaves in spring (for it is the leaves that really effect the work) the preparation and deposit of a new layer of wood is commenced, so that by the close of the second season there are two layers; by the close of the third season, three layers; and so on as long as the vital lease of the tree endures. The bark is simultaneously renewed, enclosing a larger mass every year. This mode of growth is prettily illustrated in the spreading of the little wave-circles upon the surface of still water. Standing on the margin of some lovely lake or mere, and looking at the blue sky and the white clouds that are reflected in its clear bosom, how often the fairy spectacle is broken in an instant by the wing of some light bird that, skimming through the air, just touches the surface and sweeps onwards. But the effect of that touch is to cause circle after circle of tiny wavelet to move away from the spot where the touch was given, and as far as the eye can reach the beautiful phenomenon is continued. Just like this succession

of wave-circles is that of the annual wood-circles of a tree, only that on the water we have but an evanescent effect, while in the tree there is new substance and solidity. The mode of growth and the phenomena referred to are denoted by this word "exogenous," which is literally no more than "expansion outwards."

Very different are the mode of growth and the internal condition of the trees called "endogenous." These show no distinction of bark, and wood, and pith; they are destitute of branches (except in a few instances); and their leaves, which are inconceivably enormous to anyone who has never seen leaves larger than those of English trees, are produced only upon the summit of the stem. They are chiefly represented in the illustrious tropical productions known as palm-trees—those soul-moving emblems of the south and east, and in England are only seen in large and costly conservatories, where room can be afforded them to lift their green pride on high. Even then we only see them as juveniles, no possible structure of glass being competent to shelter them when full-grown, except in the case of some of the dwarf kinds.

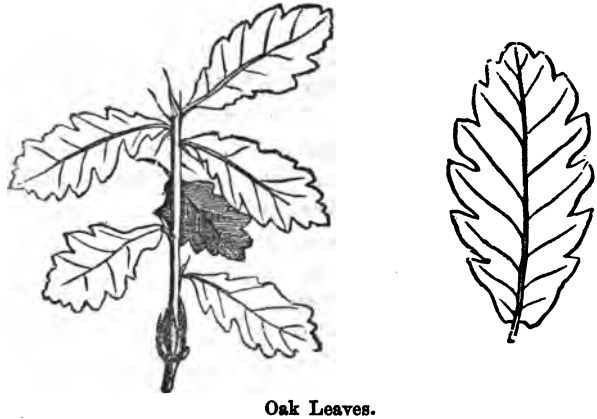
It is among the exogenous trees, accordingly, that in England we find our delight. It is these which form the sweet and solitary arcades of the forest; that are the homes or the resting-places of the birds; that shelter us from the storm, and temper the heat of the sun; whose trunks are embossed with tender creepers of green moss, or hidden by the activity of the innumerable and ubiquitous ivy;—it is these that are so lovely in their youth, so venerable and patriarchal in their old age; these that stand still in quiet dignity while we talk of four-score as a wonderful life-time, and for their own part watch the rise and fall even of nations. For the nature of an exogenous tree being to expand and enlarge *externally*, there is of course no physical limit to the diameter it may attain, or to the number and massiveness of its boughs and branches, or to the multiplication of its twigs and leaves; and should the lease of life allowed it in the Divine economy be considerable, as happens with certain kinds of mimosa, and with many of the pine and cedar kind, it may go on growing and enlarging for ages, and after a thousand years be still in the full vigour of its existence. Hence it is that the grand scriptural image acquires such richness and force—"As the days of a tree are the days of my people." Hundreds of trees are standing at this moment in America, some in California, others in Brazil, that were alive when those words were written, and with a grasp upon life and the earth that seems to assure them a period of which they have perhaps no more than passed the

meridian. England possesses multitudes of endogenous *plants*, though no endogenous *trees*. Lilies, grasses, rushes, are all structurally of the same nature as the palm-trees, and now and then they give us a pretty prototype of the palm; but the *beau idéal* of the endogen, as said before, belongs to the equinoctial regions. It is a proud and inspiring thought for us nevertheless, that art and the skill of the gardener allow us the sight of them. By virtue of our hothouses and conservatories, we who live in this age are introduced to the vegetation of every part of the world, without the trouble or risk of departing either long or far from home. England, which stands midway between extreme cold and extreme heat, with a surface that embodies in miniature every element and ingredient, except the volcano, that gives variety and sublimity to the face of the earth;—England, through its art and science, is the EXHIBITION of the whole world. We need but ask for Saloon A, or Saloon B, and all that the heart can desire is displayed to view. Kew; Chatsworth; if we cross the Tweed, Edinburgh; and Dublin, if we make our way to the green isle, show collections of palms, among other things, that amply inform us as to their wonderful nature. In these glorious places we see the tropical regions as in a concave mirror or in a stereoscope, with the added charm that all around us is alive.

Foremost among British trees, alike in grandeur, utility, length of life, and amplitude of association, stands the Oak,—that famous production which even in the days of Homer was a time-honoured proverb for strength and endurance. "Thou," says one of his heroes to a man who quailed, "art not made of the oak of ancient story."* In England this noble tree is found under many different forms, the contour, the endurance of the foliage, the figure of the leaf and acorn, varying considerably more than the unobservant of minute particulars would ever suppose. All the varieties are resolvable, however, into two principal ones, and these two are so nearly connected by intermediates, that it is probable the oak of old England is after all very like a human face—presented under innumerable profiles and complexions, but always and everywhere the same good old-fashioned combination of features that was possessed in the beginning. The two principal forms are the wavy-leaved oak and the flat-leaved, called respectively by men of science, *Quercus pedunculata* and *Quercus sessiliflora*. The former is distinguished by its remarkably tortuous branches, and the irregular disposition of the foliage, every leaf lying in a different plane, and the whole presenting an aspect of great massiveness. Leaf-stalk there is scarcely any; the acorns, on the other hand, are borne

* Odyssey xix. 163.

upon peduncles of several inches in length. Individually, the leaves, as expressed in the name, have a strong tendency to be wavy in their surface and outline. The flat-leaved oak differs in its compact form, and strong disposition to roundness; the branches are more horizontal, the leaves lie in parallel planes, and individually are flat, and with rather long stalks. In spring we may further observe that the leaf-buds are larger; and in autumn that the acorns are shorter and broader than in the other, and that they are almost or totally destitute of peduncles; if present, the peduncles are stout, not slim and delicate as in the wave-leaved. These are distinctions very easily made out.



Oak Leaves.

To trace them is at once an agreeable and instructive occupation for half an hour, when we go into the country for a day's enjoyment. Nor does it end in the simple discrimination of two different things; for the wave-leaved oak has the reputation of being a more excellent tree than the other, while the flat-leaved is considered better adapted to excite ideas of the picturesque. A glorious spectacle is that of the oak in the month of April, when its amber-tinted buds stud the tree like so many jewels. They do not open hurriedly, like those of the sycamore or the horse-chesnut. From first to last, the life of the oak seems characterised by placidity. It lives so long that it can afford to be leisurely in all its movements, and at every season alike expresses dignity and calmness. In a little while, when the young leaves are half-expanded, come the flowers, though not such flowers as we use for bouquets. Nature has other ways of fashioning flowers than after the model of the rose or lily. To note these diverse ways is one of the great

rewards and charms of Botany,—which does not mean calling plants by Latin names, but exploring the wonderful nature of their various parts, discovering how exquisitely they are fitted for their several uses and destinies, comparing one form of leaf or flower with another, and discerning step by step that nature is all one song, but coming forth in countless tones, or rather like a grand Oratorio, where we never have two parts exactly alike, yet everywhere repetition and reverberation to the ear that knows how to listen. Flowers are not necessarily sumptuous, and fragrant, and brilliant-hued in order to *be* flowers. The idea of a flower implies simply an elegant mechanism for the production of seed, and that this be large or small is of no more importance than that the heavenly teachings should be printed in one kind of type or another. It is worthy of note also that the great timber-trees of the north are remarkable, as a rule, for the insignificance of their flowers. The short-lived vegetation of the field and garden seems decked with its sweet flower-brightness in compensation. Where our hearts are to be lifted up in admiration of strength and patriarchal majesty, the allurement of flowers can be dispensed with.

Those of the oak, as said above, make their appearance cotemporaneously with the young leaves, and under two different forms. First, there are innumerable yellowish tufts and fringes depending from near the extremities of the twigs; among them are the tips of the rudiments of the future acorns, scarcely larger than the head of a pin, and of a deep red colour. The oak is thus one of the trees in which the distinction of sex is strongly marked. All plants express, in some way or other, the omnipresence in organic nature of masculine and feminine. But it is not always palpable to the eye. Some philosophers consider that where it is most plainly shown, we have a nearer step towards perfection of structure; and on this ground they regard the oak and its congeners as far more noble in the scale of vegetable life even than apple-trees or vines. Acorns would never be developed from the rudiments in question, were the tasseled fringes not to coöperate, and contrariwise the tasselled fringes would yield no acorns. Summer aids the development; then comes serene October, and the pretty embossed cups, round as a bubble upon the water, holding them up awhile, as a young mother holds up her child, cast them to the earth in kindly largess. But although the acorns may sprout where they fall, none grow to be even saplings beneath the shade of the parent. Only those that get carried to a little distance become oaks. And this planting has been observed to be largely effected through the instrumentality of squirrels. So beautifully are

the necessities of the various realms of nature harmonized one to the other. The little quadruped fulfils an instinct proper and needful to its own existence, and in so doing, contributes to the perpetuation of the tree.

Representatively—that is, as viewed by the light of poetry, which means, in turn, by the keenest insight of the mind, that penetrating below the surface, and beholding the centres of things, brings out their highest value, that is to say, their Significance—representatively, the oak is strength, endurance, and dignity, holding the same place among trees that the lion does among animals, and the eagle among birds. Hence we find it many times referred to in Scripture, and always in connection with what is understood to be permanent and enduring,—as when the tables of the law are described as having been set up against an oak, to signify that the law was given to last for ever. It would be a very trifling piece of information for the dignity of Scripture to communicate, if it were no more than the bare physical fact that the tables were placed against an oak. Scripture always *means* something—it does not simply speak. It is not a book of words, but of ideas, speaking for all time; which kind of language results from the facts that it records being not simply literal but representative. It is literally true, without doubt, that the tables were placed against an oak; it is no less true that an oak was chosen because of its symbolic meaning for all ages. The poetical character of the oak is beautifully acknowledged again in the time-honoured allusion to the defenders of our country as "hearts-of-oak." No one disputes the fact that our sailors are made of this capital material; yet how absurd the statement if taken in any other light than that of poetry! This shows that although much which holds the form and outward show of poetry may be unmeaning and foolish, the inmost and true spirit of poetry finds a response in universal human nature, and that its genuine language will ever bear interpreting.

The oak is not only a tree; it is a garden and a country; for living things innumerable find their homes, and security, either among the branches or upon some portion of the surface. Birds, insects, epiphytic plants, are identified with the natural history of the oak to the number probably of several hundreds; so that to study the inmates of an oak-tree, is literally like exploring the streets and squares of a populous town, and taking a census of the occupations of the inhabitants. There is no special or particular bird found only or chiefly amid the foliage, nor indeed are birds ordinarily found in definite kinds of trees; only

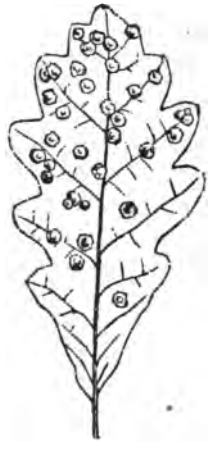
now and then, as in the case of the crossbill and the fir, do we find any direct consociation. For trees are to birds what the ocean is to the nations of earth, free to the visits of all in turn, and witnessing, every day, new arrivals and new departures. The oak, however, is emphatically of this nature, and the absence of any particular visitant renders the grand old hospitality of the oak to the feathered tribes even more remarkable, perhaps, than did any particular species of bird show a preference for it. In the welcome it extends to them, we see over again why the oak should be the king of trees, for herein it corresponds with the princes and patricians of human nature, who are the men that possess hospitable minds, giving kindly hearing to all ideas, and a welcome to everything that may hold within it the soul and seed of truth. The idea and speculations, the theories and hypotheses, that float about the atmosphere of human intellectual life, are to the little world of man just what the birds are to the physical atmosphere; the wise man gives a courteous ear to all, and leaves it to fools to reject and condemn before they have listened. Nothing is ever got by shutting one's self up in a creed. It is better to have an excess of faith than too little. The Evil One likes no intrenchment better than that which he finds in the incredulities of pride and ignorance.

Insects are to the oak a supplement so enormous, that were the tree to be blotted out, the entomologist would weep. Those lovely creatures that sail on painted pinions, the butterflies, in many kinds; beetles, and a multitude of little creeping things that none but the enthusiast is aware of, flock to it, and abide or lodge upon it; and when an oak-tree is felled, it is an earthquake to them. To the casual observer this wonderful insect-population is of necessity not obvious. But no one can help noticing the certificate and result of its presence. We have it in the odd productions termed oak-apples; also in galls, and in those beautiful yellowish-rusty spangles which in autumn crowd the under-surfaces of the leaves, and look like the "fairies' money" of a fern. Oak-apples, the most conspicuous and familiar of these adventitious productions, have nothing in them, as was once supposed, of the nature of fruit. They receive their name simply from the rude resemblance they bear in colour and figure to the juicy produce of the orchard, and essentially are nothing more than masses of extravasated sap, dried and consolidated by exposure to the atmosphere. They originate in the instinctive actions of a little insect, which punctures the bark or skin, usually selecting a bud, and deposits her eggs in the wound; in consequence of this, some peculiar and abnormal vital action

is set up, which causes the sap that flows towards the wounded part to ooze out, and in due time to form a globular lump, the eggs lying snug in the interior. Soon after Midsummer the eggs are hatched, and upon tearing open one of the so-called apples, the white grubs may be discerned. Eventually they become winged creatures; they force their way to the exterior, and fly away. So wonderful are the "homes made without hands!" A great and fascinating volume might be written upon such abodes of creatures. The splendid ingenuities which man has brought to bear on his dwellings have all been anticipated by races of beings to whom art and science are unknown. It is grand, in truth, to contemplate arches and columns, porticos and noble windows, to say nothing of the countless contrivances intended to promote domestic convenience and comfort; but nowhere is the splendid instinct of self-protection, which in man, enriched by intellect, flowers forth in its highest form in architecture, more beautifully and exquisitely displayed than in the methods adopted by insects to secure the same important end. It has, moreover, the special wonder about it, of being exercised on such indifferent, and as it would seem at first sight, such insufficient materials. Marble and granite, metal and timber, are their own assurance of solidity and durableness; the insect works on substances than which there are none in nature more soft and tender.

Galls, in their various kinds, are of precisely similar origin. So, in a word, are galls of every description, and upon whatever species of tree they may occur. When young, they often resemble cherries, and one sort, from this circumstance, has been supposed to be the famous "apple of Sodom," fair to behold, but turning on the lips to dust and ashes. Later and more scientific investigation has shown this to be an error, but it is one perfectly natural to have been fallen into, since the appearance is tempting, and Palestine and the adjacent countries produce not only oaks, but gall-insects and galls. It is from Smyrna that a large portion of the galls used in the manufacture of ink are imported. Our English ones would answer the same purpose, but not so well, nor are they produced in England in sufficient quantity to make it worth while to collect them. It would be matter of regret if they were so produced, because the tree must needs suffer from the loss of so much sap as is needed to form them; and in England, though we have plenty of oaks, we require them for other purposes. One kind of oak-gall is produced in clusters that resemble a thin bunch of red currants; another is like a little brown artichoke, being formed from a leaf-bud which has had its legitimate growth spoiled by the operation

of the insect, and opens its tiny leaves prematurely, and as simple brown scales. Least of all, but quite as pretty as the oak-apple itself, are the "oak-spangles" strewed on the under-surface of the leaves, and which bear, as just now said, no distant likeness to the circular mounds of fructification of such ferns as the common golden-dotted polypody of every hedgebank. A single oak-leaf, jewelled by these beautiful little growths, and shown to an inexperienced observer, might and would be taken for a genuine fern-frond, so strange is the similitude. But a near view at once discloses the difference. While the spangle of the fern consists of a heap of minute boxes of a rich gold-colour, every one of them bursting when mature, and discharging innumerable atoms of "fern-



Oak-Spangles.

Ivy.

seed," the spangle of the oak-leaf is a crowd of little greenish or reddish hairs, and seems as if cut out of a piece of velvet such as might have been worn by Titania. It consists, in fact, of the same kind of substance as the oak-apple, but disposed in a different form, the insect that gave the impulse being a different one. Not the least extraordinary fact in this strange history is, that out of the same material, the simple sap of the tree, should arise things so unlike as the oak-apple and the oak-spangle, and that the difference should be referable to the diverse influence of a couple of flies!

But it is in the plants that take up their residence on the oak that we see its most beautiful occupants. First there is that glorious old evergreen

the ivy, which, beginning its career like a little centipede, creeps slowly and tenderly up the surface, making sure of its wiry footing at every step, and decks the massive trunk with sweet wandering and zig-zag sprays of green, variegated, if they get light enough, with pretty and unaccustomed hues. While young, and until quite among the branches, the leaves are angular. There are no flowers, and perhaps none ever appear, for the ivy is peculiar in this respect, unconcerned to bloom so long as it has anything to cling to, and producing its flowers only at the very extremities of its growth, where they roll out from the supporting boughs of the tree, and the leaves become oval and pointed. This is more remarkable when ivy clambers up some ancient building, a castle, or the relics of some roofless abbey; but it shows enough in the case of trees, if the plant be of sufficient age. There is something peculiarly fine in the spectacle of a venerable tree with its encircling ivy. At every season of the year ivy gives an air of richness; the gloss of the leaves, the easy and graceful swing of the masses of foliage, the *chiar' oscuro* caused by the long petioles, and above all, the pleasing sense of the stay and security which it affords,—at every season of the year these are present to the eye and mind, and render a pilgrimage into the forest one of those animating poems which nature is ever ready to recite to us. Bracing up the old tree with its friendly clamps, so far from being, as many suppose, an enemy, it is in reality a protection; and when we see leafless and withered boughs rising above its verdure, like gigantic antlers, it is not because of the ivy, but from inanition. Still less is the ivy a *parasite*, as often imagined. It is not even an epiphyte. To be a parasite, a plant must send sucker-like roots into the very substance of its victim, and draw from it all that portion of its sustenance which other plants are accustomed to derive from the soil by means of genuine roots. Ivy does *not* do this. Although attaching itself to the bark of the tree by ten thousand little holdfasts, it has its roots in the earth below, and from the earth it derives its nourishment; and if the stem be severed, it will die like any other plant, unless, as has happened in some rare instances, it can manage to sustain life by absorption from the atmosphere. For this reason also, ivy is not, as we say, even an epiphyte, an epiphyte being a plant that simply rests upon the branch of another, as a bird builds its nest, and that lives upon the decaying matter that accumulates around, and upon the water and carbon of the aërial sea.

The oak is tenanted, not only by the ivy, but by epiphytes and a parasite as well. The parasite is the famous mistletoe,—the plant

sacred in the legends of the North, and the berries of which have been supposed to be the "forbidden fruit"! A good deal of uncertainty exists with regard to the mistletoe of the Druids. If so plentiful upon the oak as to allow of the tree being regularly visited for the sake of lopping branches, with all those pretty and sacred ceremonials that are reported of it—the white robes, the golden knife, the hymns, and the procession,—then it would almost appear that some other plant, and not what we to-day call mistletoe, was the one in request. For there are scarcely more than two or three extant examples of mistletoe growing upon the oak in this country, and unless it were abundant, at all events in some parts, it is difficult to see how the ritual could be carried out, unless at long intervals, and almost privately. There is no reason why mistletoe should not grow upon oak trees to-day just as well and as luxuriantly as it is said to have done in the days of the ancient Britons. Perhaps the great sanctity ascribed to it came of the very fact of its being so rare. At the present day mistletoe is found chiefly upon apple-trees and hawthorns. Some twenty or thirty other kinds of tree have been noticed as bearing it,—the lime, for example, the poplar, and the acacia; but the two former are evidently its favourites. Because of the difficulty referred to as regards the Druids' mistletoe, some authors have supposed that another species, not now found in England, though plentiful in some parts of the Continent, may at the time of the Druids' worship have existed in our own country, and that it was extirpated either by themselves, or by those who sought to help forward Christianity by effacing every particular connected with paganism. The plant referred to is called by botanists *Loranthus Europæus*.

The epiphytes that give beauty to the oak, chiefly belong to that wonderful section of plants termed the Flowerless. Not that they are absolutely without flowers, but that the parts are too small to be viewed without the aid of a microscope or of a magnifying glass; and thus that they are "flowerless" when compared with a rose or a lily, or even with a grass from the meadow.

Those of their race that seek the kindly service of the forest-monarch are principally mosses and ferns. How sweet on a summer's day to rest awhile, when wandering in the woodland, on the green mantle that overspreads some prostrate trunk,—noting the fairy forest of its elastic foliage, and the pretty little sprays that dart out upon every side, shooting hither and thither like the frost-flowers upon the window-panes in mid-winter! The mosses of the living oak are of precisely the same

kind. In their tender and elegant sympathies they make no distinction between the overthrown tree and the tree that stands in its pride. One of their most exquisite specialities is that, like ivy and the faithful wall-flower, they are companions alike of life and death,—oftentimes adorning the one with bright hues foreign to its nature, and never failing to render the other beautiful. In the wild and desolate region called Dartmoor, strangely situated in a county that otherwise is the "garden of England," there is a truly wonderful spectacle of this nature. On the left bank of the river, about a mile above Two Bridges, the hillside is heaped with blocks of granite, in the spaces between which are nearly five hundred trees of the wavy-leaved oak, but singularly distorted. They are gnarled, knotted, and twisted, seldom more than ten to fourteen feet in height, and with a circumference not exceeding five feet, and generally much less. The belt is ragged and interrupted, and extends for the distance of about half-a-mile. Such a group of trees would not be very remarkable in itself: what renders the scene so extraordinary is that the branches, except at the extremities, and this not always, are completely matted over with a moss, called by botanists *Anomodon curtipendulum*. In most cases the green covering is from ten to twelve inches in thickness, though the branch that supports it is not of greater diameter than a child's wrist. The weight is so considerable as to bend the branches downwards, just as we may see the branches of lilacs and other supple trees weighed down at Christmas by the gentle deposit on them of abundant snow; and all over the surface of this beautiful coating of vegetable velvet may be discovered, in their season, the lovely little seed-capsules, by the produce of which the plant is multiplied. The name given to this singular spot, which seems as if it had been touched by the wand of some botanical enchanter, is Wistman's Wood. It is easy of access, and should be visited by every one who may happen to pass through that part of Devonshire.

Every old wood and forest shows us oaks bearing *ferns*. The latter are chiefly of the kind called polypody, or the "many-footed," on account of the numerous lateral leaflets giving the idea of feet, as in a centipede. On those grand old rugged bosses which the oak is so apt to form, some ten or twelve feet above our heads, there may often be seen a tuft of this elegant plant, perched completely out of reach, and decked with those gay spangles of bright gold which render the fern in question so easy of recognition, and attract the eye of the most incurious. All lovers of nature have been attracted in the first instance to the specialities, by some particular plant or flower, which, holding

up its finger, as it were, and beckoning, has allured them into one of those sweet side-chapels of the great cathedral, which, when a man has once entered, he never desires to leave. There was a famous fable in olden time of a country in which grew lotus-trees. When travellers entered that country, and tasted of the fruit, they were overpowered with an indefinable and delicious longing to remain there always, not necessarily to be always eating lotus, but to enjoy the heavenly climate and atmosphere that produced it. That country, with its lotus-trees, has not been blotted out. The fable, like every other true one, is for all time. Living nature, everywhere round about us, is the country of the lotus, and the fruit is the serene and innocent delight, with innumerable sweet teachings for our intelligence, that comes of our looking at it reverently and lovingly. The beckoning thus given is always remembered with pleasure. Fries, the great German writer upon fungi, tells us how he was attracted to the study of that class of plants, by the lustre of the crimson Dryads' cup, by botanists called *Peziza coccinea*, which in the earliest days of spring appears on dead branches in damp woods and groves, and resembles an immense acorn-chamber of the loveliest coral-red. No slight pleasure is it to another botanist, albeit a mere stripling by the side of Fries, to view, over again and yet once more, year by year, in forest-glades, where the trees are companions, that pretty and simple fern that captured his imagination in early youth. The oak seems to take pride in holding the fern in its giant arms; the fern shows us beautifully how the grandest thing in nature may still be enriched by the simplest, just as great men, gifted with the might of wisdom, and able to pour forth in unbroken streams, music that makes our very soul come up and sit listening in our ears, still delight to be clasped by the sweet tendrils of simple hearts, to watch and help their little strivings after the amiable and the true, to listen to their innocent songs, and to bless them with their bountiful protection.

The fern upon the oak must not be confounded with that one specifically termed "oak-fern," and technically called *Dryopteris;* nor yet must it be confounded with another which gives a quaint resemblance to the oak in the section of its stem. "Oak-fern" has no peculiar connection with oak-trees, and is as often found far away from them as near. It is so called because the general outline or profile, when a leaf is laid flat, gives a pleasing idea of that of an oak standing alone in its pride, and viewed from a distance. This fact of resemblance in outline between things in other respects totally unconnected, is one of the most

striking in nature. We should expect it in some degree from the intimate affinities everywhere displayed to the man of science. But it is independent of these, lying outside, just as the exquisite resemblance of the shake in music to the play of moonlight upon rippled water lies outside of any actual connection, yet is as much a part of the method and order of nature as the ripple of the water itself. So with the charming similitude of the painted leaves of autumn to the variegated western sky of evening. The close of the year and the close of the day both acquire a tinted loveliness peculiarly their own, marked and soul-inspiring in the highest degree, yet in no measure connected or comparable one with another, as to their physical causes. The two things lie outside, yet are alike, plainly because God says, death, departure, decay, need not necessarily be ugly and disagreeable to look at: they may be made lovely as life, yea, lovelier; and if there be wretchedness in their aspect, probably it is our own eyes that look obliquely. Whether it be a soul about to cross the river that has no bridge, or trees that are about to cast their vestures, and be for awhile, as it were, dead, or the day that is to be exchanged for starlight, it is still compatible with its passing away that the light of beauty shall be diffused there.

The other fern referred to as being often very naturally associated with the oak is, in truth, like the *Dryopteris*, the image of an oak-profile in little, but it is not from that circumstance that the connection has been supposed to exist. When the stem of the plant in question, commonly called Bracken or Brake, and by botanists *Pteris Aquilina*, is cut slantwise a short distance above the root, the section of the sap-vessels gives a kind of rude drawing of an ancient and massive oak, loaded with exuberant foliage that bends the branches towards the ground. A thousand strange resemblances of this nature might be described, showing that our world is positively one of echoes—not necessarily for the ear, but rather, mainly for the eye, which in its powers and privileges is the synthesis and compend of all the other organs of sense.

Lastly, concerning the oak, should be mentioned the great age which it attains—

> The monarch oak, the patriarch of trees,
> Shoots rising up, and spreads by slow degrees;
> Three centuries he grows, and three he stays
> Supreme in state, and in three more decays.

Nine hundred years, that is to say, constitute the ordinary term of oak-life. But there are in Great Britain many examples of oak-trees of

ages far exceeding this. The Salcey-forest oak in Northamptonshire, described by Sir Thomas Dick Lauder as "one of the most picturesque sylvan ruins that can be met with anywhere," is calculated, on good grounds, to be more than fifteen hundred years old; while in Clipstone Park, Nottinghamshire, stands a venerable tree called the Parliament oak, from a tradition that under its branches a Parliament was held by Edward I. in the year 1290, at which time it is probable that it was an old and large example of its species. We count it a grand thing if a man lives to be a hundred years old. How trifling is such an age compared with that of an oak, which in its ruins reminds us of Palmyra!

THE PINE.

Among the many fine tribes of plants which constitute the Vegetable Kingdom, not one presents aspects of greater grandeur than the family named after the Pine-tree. No trees attain greater stature than these. In very few instances do we find an equal longevity, or a corresponding massiveness of trunk; and although the number of different species is comparatively small, no trees form forests of such immense extent, or of composition so exclusive. Linnæus gave to the palm-trees of the tropics the happy name of the "princes of vegetable nature": he might, with still greater propriety, have termed the palms the vegetable princes of hot countries; the pines and firs and their allies, the princes of cold ones. For while exogenous or branching trees are diffused over the whole world, and are found under every possible variety of climate—except the extreme frigid, where no life can endure,—palm-trees, on the one hand, are restricted within certain parallels of latitude, decreasing the further we depart from the equinoctial; and pine and fir trees, on the other hand, belong emphatically to cold and temperate countries. Not that either of these great races is without example where the other prevails. Far from it. There are palms even in the south of Europe, where they form a striking and attractive novelty to the English visitor, especially to any one seeking those portions of the Mediterranean coast of France which are the winter resort of invalids; and another kind, indigenous to the cooler parts of China, appears to be hardy enough to bear English Christmas weather without protection, being already an ornament of many a lawn containing select collections of plants. Similarly, there are trees of the pine and fir kind in the tropics; but it is generally at a considerable elevation above the level of the sea, or where the mountain-side provides a habitat and temperature not unlike that of the lowlands of the temperate zones.

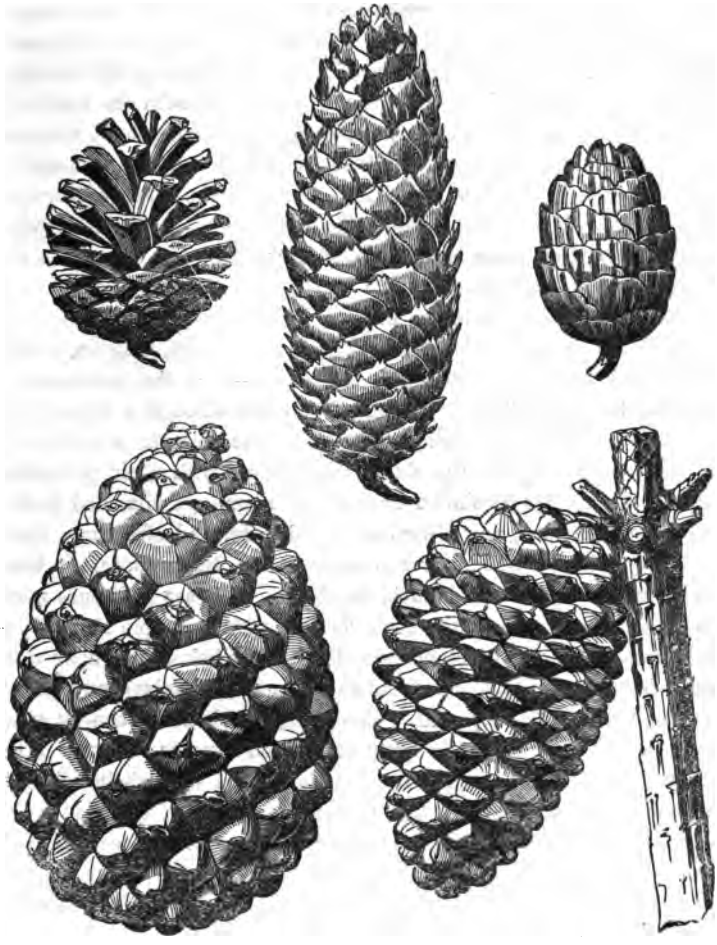
One of the most remarkable facts in botanical geography is the concordance between the vegetable productions of the plains in given latitudes, whether north of the equator or south of it, and those of the mountain-sides in latitudes not so far removed. To ascend a mountain in the tropical and sub-tropical zones, is like setting out from the foot

of that mountain and going due north in a direct line; or if the mountain in question be upon the Australian side of the equator, then it is like starting from the base and going in a direct line southwards. In a less degree, this curious parallelism is observable even in the mountains of Europe, which present successively, as we ascend them, the plants of countries more and more northerly. It may be remarked indeed in the mountains of our own country. Very different is the vegetation of Borrowdale from that of the tremendous summits that rise upon its flanks. In the green meadow by the river are the purple columbine and the lotus; as we ascend the slopes, their place is taken by the delicate parsley-fern; and by-and-bye we enter the region of the club-mosses, and of that lovely plant the alpine lady's-mantle, with leaves that are plaited like a fan, and lined as it were with satin. Here too are little saxifrages and mosses, that, like the chamois tribe, are never seen upon the plains.

Just of this nature, only on a far grander scale, is the succession of plants upon a mountain-side in countries near the line. Ararat, Teneriffe, and the Himalayas, show it in perfection; and thus are we prepared for the existence of pine and fir-trees at a very little distance from palms, but *higher up*. Some of the noblest of the race are found upon the high grounds of Mexico and northern India; and coming nearer home, everyone will remember the frequent allusions in Holy Writ to the firs upon the mountains of Palestine, and to the cedars that made Lebanon glorious, as contrasted with the palms which flourished by the water-side. The world may be compared to two great snow-capped mountains of the tropics, sliced off and placed base to base, so that the tops shall be the poles, the midway portions the temperate zones, the conjoined bases the equatorial zone. The practical value of this great fact is immense, since the exact ratio that a given elevation bears to a certain distance north or south of the equator, is now pretty well known, and skilful men can calculate what plants are likely to allow of culture in remote countries, where instead of plains there are mountains, or *vice versâ*.

In the structure of their stems and branches, pine and fir trees resemble the oak. They have distinct bark, wood, and pith, and the annual rings by which their ages may be reckoned, are ordinarily very distinct. Viewed with the microscope, the delicate fibres of the wood are found however to present a very singular and pretty appearance. They are marked from end to end, as it were, with little spangles, so differently dispersed as to serve as capital distinctive characters for the

various kinds. Such marks rarely occur elsewhere, and are specially interesting in the case of the pine and fir tribe, from the circumstance of their being retained even when the wood is fossilised. This wonderful instrument, the microscope, not only illuminates the present, and by opening our eyes and hearts to a thousand new experiences of



wonder and delight, lengthens life; since life, truly so called, consists in agreeable impressions; it not only does this—it casts light into the graves of Time, and informs us of the nature of the trees that swayed in the wind of the infinite past, long before there were men and

women to listen to their sound. The leaves, on the other hand, so far from resembling those of oaks, are narrow, and usually needle-shaped. Their veins, instead of meandering in all directions, run in lines that converge towards the point, and not seldom the entire leaf is little more than a stiff green bristle. So with the flowers. Though distinct apparatus is present for the production of seed, and the distinction of sex is as plainly marked as in the oak, here everything is of the most simple kind. The sweet brightness of rose and lily is entirely wanting; even the plain green floral coverings of a grass-blossom are not to be found; Nature seems to have taken pleasure in showing how, with the utmost stateliness of figure, could be associated the last extreme of incompleteness as to flowers. The stamens make their appearance either in pretty little sheaves along the branches, as in the larch-tree, or in clusters that seem mountains of such sheaves; the pistils are developed in connection with the rudiments of those elegant and familiar productions known as fir-cones;—not, however, as in other plants, in the form of a closed ovary, but as flat scales, with the ovules lying at the base; and when the time arrives for the pollen to be conveyed to the ovules, it is transmitted, not through a stigma and style, but immediately. The pollen gone, the stamens wither away and fall to the ground; the clusters of ovules, with their protecting scales, undergo changes similar to those of ripening fruits, and in due time we get the cone, now a hard and solid body, and oftentimes more like the work of the wood-carver or sculptor than the produce of a tree. The variety in these cones is most wonderful. We see in it once more how amazing is the ingenuity that, dealing with a simple idea, apparently susceptible of no modification, shall nevertheless play upon it as a musician upon his lute, and strike us the more by displaying resources where and when least expected. The pieces of which the cone is composed are not, as would at first appear, altered remains of a perianth; they are the scales by which the female flowers were sheltered, now greatly enlarged and indurated, and forming a kind of capsule for the seeds. While young, they remain closed; when mature, especially if exposed to warmth, they separate, and the seeds fall to the ground. But in many cases the seeds are provided with a wing, which enables the wind to carry them to a distance.

What a beautiful phenomenon is this of the wings of seeds! "Give us wings" is the universal cry of nature; and though we commonly associate such wings with plants like thistles and dandelions, in truth there are as fine examples, yea finer ones, among trees. One of the most

exquisite productions of nature is the winged seed of the Brazilian tree called by botanists *Bignonia echinata*. Though in no way related to the pines and firs, it has a wing to every seed, spreading on each side like a film of iridescent glass, thinner than the thinnest tissue-paper, and in width and general appearance reminding us of a white butterfly. When cast into the air, the seed slowly circles downwards, like a falling leaf in October, unless caught by a current of air, when it sails away into the aërial sea. The very curious and peculiar fruit of the pines and firs—familiarly known, as above said, by the name of the "cone"—was early taken advantage of in order to give an appropriate name to the family. Whether pines or firs, cedars or larches, botanists call this magnificent race by the name of "Conifers," or "Cone-bearers," and under this name we shall henceforth always speak of them.

One species only is a native of Britain—that one commonly known as the Scotch fir, though technically a pine. The difference between a pine and a fir is very easily made out. Firs have their leaves irregularly distributed over the surface of the branch or twig, and every leaf grows quite distinct and apart from its neighbours. In pines, on the contrary, the long leaves grow in couples, or in threes, or in fives, and every set is enclosed in a little cup-like sheath, formed of brown scales. Moreover, in the cone of a fir-tree, the scales are always thin at the edge; whereas, in the cone of a pine-tree, they are much thickened, forming protuberances upon the general surface, and giving the cone that richly-tesselated appearance which is so greatly admired. The "Scotch fir," accordingly, is properly the Scotch pine—*Pinus sylvestris*. It grows wild throughout the Highlands of Scotland, and, not improbably, is wild also in some parts of England; but so many thousands of trees have been planted for use and ornament, that now it is next to impossible to discriminate the aborigines, if any really survive. The place to look for wild ones is the remote mountain-side. So thoroughly is this grand old tree a mountaineer,—so truly, indeed, are all conifers children of the heights, that it is supposed by some that the very name of Pinus is but an altered form of the ancient Celtic word for a mountain, as preserved to this day in *Ben* Lomond, *Ben* Nevis, *Ben* Cruachan, and in the name of the A*pen*nines. Were this the place, a very entertaining chapter might be written on geographical names taken from plants and trees, and, contrariwise, on names of trees, &c., taken from those of countries and localities; it must suffice, however, to indicate that such a subject awaits the scrutiny of the curious, and to mention the Morea, as so

called on account of that peninsula resembling in its outline the leaf of the mulberry-tree, *Morus nigra;* and "Buckinghamshire," as signifying the home of the beech-trees, "beech" being only another spelling of the older Teutonic name, *buck*, or *buch*.

As we are made best acquainted with it, the Scotch pine is generally found in great platoons, or used almost alone for large plantations. Sometimes it is mingled with others of its race; frequently it is the only tree over an area of miles in extent. Whether formed of this tree alone, or of conifers in variety, a pine-wood is one of the most imposing scenes in nature. It is totally different from a forest of trees such as oaks. The latter kinds of trees are deciduous. Not so the conifers. These, excepting the larch, preserve their foliage all the year round, changing the leaves season by season, after the manner of plants in general, but still, for ever and always, dressed in perennial green. At two seasons of the year, the conifers, like other trees, show a difference in their complexion; namely, in spring, when the new shoots start forwards, oftentimes in elegant horizontal sprays, like the hands of a strong swimmer put forth for the new stroke; or lifted on high, like plumes of green hair;—they are remarkable again in late autumn, especially in the case of the Scotch pine, when other trees are fast becoming dismantled. For at this season, in the gloom of November, often indeed in October, when the ground is strewed with the earliest-fallen leaves of the ash and the sycamore, the Scotch pine also casts its older leaves; and the new ones, developed during the summer that is now a memory, no longer clouded by the dark and brownish hue of the departing ones, shine with a beautiful lustre we do not observe except at this moment. In a word, Scotch firs usually look best at the close of autumn. With the evergreen character of the tree is to be associated, if we would rightly understand the pine-forest, the remarkable uprightness and straightness of the trunks, and generally speaking, the symmetry and mathematical precision of the branches. The Scotch pine is less remarkable in this respect than many others; they are, nevertheless, features in which it shares. A coniferous tree is never found accommodating itself to the surface of broken ground. The branches never hang themselves over a waterfall or a ravine. They refuse to receive impressions from surrounding conditions, maintaining their own peculiar and inflexible direction. On a mountain-side, we may notice, even as we rush past in a railway-carriage, the stiff and erect green pyramids, every tree the exact counterpart of every other, and the stems as straight as the columns of an ancient temple. Go into

the deepest and shadiest ravine, and it is still the same. Not a bough deviates from the angle prescribed by the great Architect; we seem to be in a kind of vegetable cathedral, so regular are the proportions, so tall and so graceful are the pillars.

In a pine-forest this straightness is made so much the more noticeable from the circumstance of the trunks of the trees being ordinarily destitute of branches for a considerable distance above the ground, so that we seem to be thrown into a labyrinth of brown poles. On these branchless trunks is seen neither mistletoe nor ivy. A peculiar independence and royalty of nature in the conifers generally, seems to keep all such visitors aloof. True, there are examples of both parasites and epiphytes occurring upon them; but in England this is very rarely the case,—so rarely, that the exception is merely the proof of the rule. No woodbine ever twines round the stem of a pine or fir. The wild clematis, that loves to deck other trees with its beautiful flossy tufts, at the season when red berries abound, is to the conifers an utter stranger. Even brambles and wild roses, that often contrive to find a lodgment for their upper trailers amid the boughs of the forest, are denied entrance by the conifer. To all comers there is still the same old dignified refusal of admission.

Partly owing to the dead leaves upon the soil, and partly to that of the dense and unbroken shade given by the conifers,—and by none more remarkably than by our indigenous species,—in the pine-wood again there is an almost painful dearth of herbaceous vegetation, and consequently of flowers. No one ever gathers primroses in a pine-wood. The ground is never lighted up with a sea of anemones; nor do blue-bells or forget-me-nots spread carpets of azure upon it. A few procumbent brambles, serving only as traps for the feet; a few of the larger kinds of sylvan shield-fern, and a few mosses of the kinds that grow in cushion-form tufts, constitute nearly the whole of the vegetation. Scattered among their alien-looking foliage are the withered brown needles and the emptied cones that have fallen from overhead, perhaps even years ago, for they are slow to decay; and except that quaint fungi spring up in autumn, there is nothing else to attract the mere collector into these solemn recesses.

But for the contemplative and the poetic mind, there is no more powerful influence than is found in the pine-wood, and this at any season of the year. In truth, the pine-wood is not a place wherein to note seasons. It is independent of them; presenting none of that sweet succession that makes ever-changing picture-galleries of the

meadows; and except when the trees sustain their share of the white wonder of winter, the aspect is perennially the same. The pine-wood is always *still*. Therefore we note in it more intensely than anywhere else, that grand sound of the wind among the tops that is so like the distant song of the sea. This circumstance has attracted the notice of observers of nature in all ages. Theocritus, who wrote pastorals more than 2,000 years ago, commences one of his beautiful poems with—"Sweet is the murmur of the wind among the pine-trees!" The poets of our own age might be quoted a hundred times, in echo. Probably the great peculiarity of the sound in question comes of the needle-like form of the leaves, and of their infinite number, the wind playing among them in a way that the broad flat leaves of such trees as the oak cannot possibly admit of. Then there are the associations; for a true poet never rests in the sentiment of simple beauty, or the sense of awe, or of grandeur, or of duration. His sympathies run immediately to things that concern the welfare and the happiness of his race. The test of *un*common sense is that it can throw light upon the things that belong to common sense; and the test of the true poet is that he can enter into the practical, illustrate it, make it more delightful in our eyes and to our daily experience; that he can marry, in a word, the ideal to the familiar and prosaic. If he do not do this, he is only a sentimentalist, and the world does not require him, nor profit by his presence in it. Take for instance, the grand thoughts that arrest the mind as to the utilities of these wonderful trees. The profusion of their growth, and their stateliness, as set forth in the pine-wood; their duration also, and the serenity of their lives, all seem fitting counterparts of their inexpressible value to man. Timber, of the most admirable description, as deal and cedar; resins in a score of kinds, translucent and inflammable; with many other useful articles of human need, are supplied by their different species, and in some cases, are the last that we should expect from conifers. Creosote, that assuages the pain of an aching tooth, is derived from a conifer; so is that exquisite balsam in which the microscopist preserves his most delicate curiosities, giving them a shrine more beautiful than monarch ever possessed. Canada-balsam, the substance used by microscopists, represents in their hands the resin of those ancient conifers which we now know under the name of amber. For amber was once the liquid secretion of a kind of pine or fir, and the insects that we find embedded in it were preserved by the elegant operations of nature, just after the same manner as those of the microscopist's cabinet.

So true is it over again that man, with all his ingenuities and discoveries, when he opens his eyes and walks into the archives of nature, invariably finds that he is only a copyist,—an unintentional and unconscious one, it may be, but still only a copyist. Nature is beforehand with him in all his devices and designs.

Even food is supplied by conifers, namely, in the seeds contained in their cones, which are often of great size, and full of nutritious matter. This is the case with those of the stone-pine, which are commonly eaten in Italy. The Swiss and Siberian pines, and many others, also yield eatable seeds. Wood, as supplied by the conifers, has its most celebrated representative in that of the cedar-tree. But the true cedar, native of the mountains of Lebanon, must not be confounded with the red cedar used for lead pencils. The latter is the produce of an entirely different tree, and is brought from the West Indies. Lebanon cedar is pale and yellowish; and although it exhales an agreeable odour, the scent is by no means so strong as that of the pencil-cedar. There is an impression with some people that the Ark was built of cedar-wood, since the consonants in the name *gopher* bear some resemblance. But this is the boldest hypothesis. Probably no one will ever know what wood was really intended by "gopher." The discovery seems past finding out. The cedars of Lebanon, it may be added, are not, as has often been thought, nearly extinct. There is a pathetic account, in certain books, of only 28 being found in the middle of the 16th century; only 22 a hundred years later; in 1737, only 15; in 1810, only 12; and in 1818, only seven! The writer admits, however, that there were always "plenty of young ones," the above figures referring only to the patriarchs; and now it appears, from recent explorations, that the tree is still plentiful, though not exactly upon Lebanon.

There is something very grand, again, in the contemplation of the great age attained by conifers, the ordinary minimum being two or three centuries. That is to say, two or three centuries constitute their potential lease of life, which they will exhaust, if not prematurely destroyed either by accident or for the purposes of human enterprise and need. Many kinds live to be seven or eight hundred years old, and the colossal Wellingtonias of California are certainly as much as 2,000, 3,000, and even 4,000 years old! In the Crystal Palace at Sydenham, stands the bark of the lower portion of the trunk of one of these vegetable Anakim,—for they are giants as well as primævals,—and no one who glances at it can doubt for a moment that the tree must

have been alive in the days of the Cæsars of old Rome. We have nothing like such longevity exhibited in any conifers in England, though there are examples of yews in this country computed to be more than 2,000 years old; but it is quite enough for the reflective man to stand in a forest of such trees as the Scotch fir, and consider what a dynasty he confronts. The venerable in nature is always commanding; but when age stretches back to the days of the Coliseum and of the Parthenon, it becomes almost above believing. Never, perhaps, does the brevity of human existence affect us so powerfully as when contrasted with these seemingly immortal trees. Generations come and go, but *they* continue unchanged. Schleiden, the great German botanist, and some disciples of his in England, compare these vegetable Nestors to the planet on which we dwell,—teaching that the trunk of the tree is the analogue of the surface of the earth, while the foliage represents the successive tides of population. Nor is there anything in the comparison that philosophy would object to. The individual contents of the world are in every instance miniatures, after their own fashion and in their own way, of the magnificent total of nature. Every one of them is *imperium in imperio*,—a kingdom within a kingdom, presenting all the parts, principles, and phenomena of the collective, only in a subdued and more attenuated manner, appropriate to the sphere of its own utility.

THE BEECH.

The Beech is one of the grandest of our forest-trees. It rises to the height of eighty or a hundred feet, and in dimensions, when full grown, surpasses all except the oak. No tree forms woods so dry and pleasant to walk in, though grasses do not flourish beneath the shade; and at every season of the year it presents some remarkable and pleasing peculiarity. In the depth of winter it is told by the smooth grey bark and the arrangement of the branches; in spring by the buds; in summer by the leaves; while in autumn, if close by, we have the very curious seed-pods, and at a distance, those auburn and coppery-golden dyes which place the beech in the front rank of painted-foliage trees.

The general character of the trunk and branches gives the idea, more than is done by any other tree, of that glorious style of architecture termed the Gothic. The columned temples of ancient Greece, and the still older ones of ancient Egypt, lead the imagination away to palm-trees, and in all probability are mementos of the use of those trees by the earliest designers of high-class buildings;—in the beech, on the other hand, though there is no reason to suppose that there is any actual artistic and historical connection between the two things, we are powerfully reminded of the clustered pillars of a Gothic cathedral,—and especially of such as are formed of many independent and slender shafts, as in Westminster Abbey, and ordinarily in the style called "Early English." A grand old cathedral, with its innumerable harmonies of splendour, its "long-drawn aisles and fretted vaults," its dimness and arcaded scenery, its calm, and repose, and coolness, its broken sunbeams, and imitative leaf and climbing plant on every vantage,—and not these only, but with its quiet and sculptured tombs, with mitred abbot and belted warrior, sleeping so softly,

> While the sound of those they fought for,
> And the steps of those they wrought for,
> Echo round their bones for evermore,—

a grand old cathedral, we say, with these, and the thousand other solacing and inspiring charms, is always the counterpart, among men's works, of the ancient forest, where, in some mode or another, every one of its imposing qualities is reverberated;—it is pleasing, accordingly, to find that here and there, amid the trees of the wood, the exact forms and ideas worked out by the builder seem anticipated. In this one, the beech, we have not merely the tall and erect pillar, smooth, except for odd cavities, depressions, and knobs; but in well-developed individuals, those singular groupings of erect branches which wear the semblance of clustered columns, and by and bye give out from their summits, gracefully sweeping arches that seem the ribs of a roof of air. The smoothness of the bark fits the beech, more than any other tree, for the carving of letters and inscriptions, which, though distorted in the course of a few years, and eventually quite lost, by the gradual expansion and decay of the outer portion, are for a while as clear and sharp as if cut in stone. How beautiful and how ancient are the associations of this practice! "There is a man," exclaims one of Shakspere's immortal characters, "There is a man haunts the forest, that abuses our young trees, carving *Rosalind* on their barks." Twenty-five centuries before then lived Paris and Œnone,—the former that famous youth who, bred among old Priam's shepherds, and tending his flocks upon mount Ida, was suddenly called to adjudge the prize of beauty among the goddesses. Venus persuaded him with the promise of the finest woman in the world to wife, and for the sake of Helen, poor Œnone was forsaken. Till that ill-fated hour, from which dated the overthrow of Troy, and all the incidents and fables that are embosomed in the greatest poems of antiquity, Œnone and Paris had been playmates and lovers. Gone from her for ever, now she writes him one of those tender and moving epistles which Ovid has preserved for us as the "Letters of the Heroines," reminding him of the happy days when they were partakers in the same amusements, and when he had been used to carve her name on the bark of trees.

> Incisæ servant à te mea nomina fagi;
> Et legor Œnone falce notata tuâ.
> Et quantum trunci, tantum mea nomina crescunt;
> Crescite, et in titulos surgite recta meos!

"The beeches still preserve my name, carved by your hand, and '*Œnone*,' the work of your pruning-knife, is read upon their bark. As the trunks increase, the letters still dilate; they grow and rise as testimonies of my just claim upon your love!" If the remembrance of

these soft moments could not recall to her his wandering affection, how little, she expresses in this simple and pathetic allusion, can she hope to recover it in any other way. The poplar was used for the same purpose in ancient times, as we may gather from the lines that follow: "There grows a poplar," she continues, "by the river-side (ah, I well remember it!) on which is carved the motto of our love. Flourish, thou poplar!—fed by the bordering stream,—whose furrowed bark bears this inscription—'Sooner shall Xanthus return to his source, than Paris be able to live without Œnone.'" By comparison, these things are trifles: to some they may seem silly, and not worth the citation. But to a heart that loves to contemplate the sweet simplicities of nature, and how little change the lapse of time promotes in all that concerns human affections and human sympathies, such records are dear. In these tender lines, as much as in any of the simple narratives of the Old Testament, we see that the passions and the events of to-day, the fidelities and the inconstancies, the lettered beech and the poplar by the river, are the same old and long-past ones over again. Human life and nature are everywhere like the waterfalls among the Alps, sparkle, and teardrops, and rainbows whenever we look, though the stream is never the same for a single instant.

Early in the spring the beech seems everywhere armed with little brown spikes. These are the buds, which in the peculiarity of their shape differ from those of every other British forest-tree. They are formed at the close of the previous autumn, and though during the winter the increase in size is scarcely perceptible, there appears to be still a slow progression. One of the most beautiful and suggestive phenomena in connection with tree-life is this early commencement of Spring. For while the almanac states March or April to be the beginning, and while our own first impressions seem to confirm it, in truth the beginning of Spring is many months before. Just as on a sweet summer's night, before the last glow of the sunset has quite departed, Aurora peeps from the east, so at the close of summer, if we look sharp, we may find indications on every hand, that a new season of life and energy is in reserve, and beginning even now. The buds of the hedgerow willows are swollen, and often shining and silvery with the soft white silk that wraps their contents; the alder-trees and the hazels are hung with the green rudiments of their intended catkins; every musician has his instrument ready, and waits only to see the lifted hand that shall give the signal. All things begin farther back than we are apt to suppose; nature's cradles, like those of wicker,

have not more of beginning in them than of ending. Presently these little brown spikes begin to open at their sharp extremities. The coverings roll away, and in due time fall to the ground, strewing the surface till it looks like a threshing-floor. At the same time are disclosed the young green leaves and the *inner* coverings, which are of a delicate pink colour, dry, soft and shining, wavy and half-curled, and so thin that the light goes through them. They hang about the opening leaves, and in the contrast of their exquisite tint, produce one of the loveliest spectacles of the vernal season. Botanists call these pretty and transitory vestments of the buds the "perules." Every tree possesses analogous ones, larger or smaller, according to the species, but in none are they more delicately fashioned or tinted. The leaves themselves are doubled up precisely after the manner of a lady's fan, whence it is that on a fine warm day, in the beech (as happens in the sycamore and several other trees), there seems an almost miraculous start into life. The mode in which leaves are folded while in the bud, varies most wonderfully. Sometimes the leaf is rolled up like a scroll of paper. Sometimes it is doubly rolled, or from each edge towards the central line, and not infrequently this condition is reversed by the roll being directed *backwards*. There are trees, and herbaceous plants also, in which the rolling is like that of a coil of ribbon; and here in the beech, as we have said, the folding is like that of a fan. The rapidity with which leaves expand is of course greatly influenced by their primitive condition, and thus it is more to the arrangement of the parts than to any casual or external circumstance that we are to look for the explanation of their very various rate of opening. So true is it, once over again, that when we desire to discover truth, we must go *inside*. The differences of the arrangement of the leaves in the bud are often accompanied by considerable differences in other particulars. The plum-tree, for instance, and the cherry-tree, are not more distinct in their produce than in this curious particular of the early leaf-folding, for while in the plum-tree the "vernation" is "convolute," in the cherry-tree it is "conduplicate."

While young, the leaves of the beech are most beautifully ornamented with lines of silky hairs, which at the same moment constitute a defence for them. With the expansion of the blade, these lines of hairs are discovered to coincide with the veins; while along the edge of the leaf, projecting from it like the eyelashes from the margin of the eyelid, are similar hairs, which give it the most delicate fringe conceivable. No other British forest-tree has its young leaves thus fringed, so that in this one single particular we possess a certain guide. A young beech-

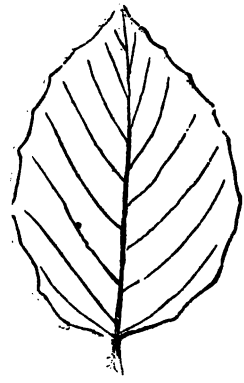
grove, about the middle of May, when the foliage is tolerably well expanded, presents one of the greenest and airiest sights that trees afford. The leaves are singularly thin and translucent, and these innumerable silvery fringes seem to aid in detaining the light. Embosoming ourselves in a little thicket of young beech, we learn for the first time in its fulness, what is the meaning of *green*, and the force of that charming line in Coleridge,—

"The level sunshine glimmers with green light."

Fully expanded, the striking and characteristic feature of the beech-leaf is at once obvious. To recognise this, it is useful to remember that tree-leaves are of five principal forms, viz.:—

1. Needle-shaped, as in pines and firs.
2. Simple and with a midrib, as in the beech, oak, elm, lime, alder, hornbeam, hazel-nut, birch, poplar, willow, Spanish chesnut.
3. Simple and palmate, as in the maple, sycamore, and plane.
4. Digitate, as in the horse-chesnut.
5. Pinnate, as in the walnut and ash.

Two or three of those in the second class have the blade rather larger upon one side of the midrib than upon the other. This is the case with the beech, the margin of which is at the same time quite free



Leaf of Beech-tree.

from notches or incisions, and by these two simple characters it may thus, under any circumstances, be identified. In general figure the leaf is oval; the stalk is very short; the primary veins proceed towards the margin in parallel and nearly equidistant lines; and the surface is quite smooth.

Convinced, as are all thinking men, of the absolute unity of nature, and with ten thousand familiar illustrations of it lying at our feet, it is agreeable to note those more recondite ones which "crop out," as geologists say, where least expected, and under conditions and circumstances the most dissimilar. Who, for example, at the first glance, recognises in the great class of leaves to which that of the beech is referable, and which is the predominant one in nature, the meanest herb and weed being possessed of it as well as the stateliest of trees,—who, at the first glance, recognises in it the idea which is wrought out perfectly and consummately in the human body! The midrib of the leaf corresponds to and prefigures the spinal column; the great ribs which strike out therefrom prefigure the bones of the human skeleton which are called by the same name; the interior is traversed by a multitude of delicate sap-vessels that answer to the veins and their crimson blood; and over the entire surface is spread an exquisitely-organised skin, through pores in which the leaf absorbs moisture, and perspires, and performs other functions so similar to those of the skin of the human body, that if clogged with dirt or soot, the plant suffers no less severely than a human being who ignores the bath. Nor is this all. Every portion of the blossom of a plant is a leaf curiously modified, so as to perform the various and special functions that pertain to flower-life. Sepals and corolla, stamens and pistil, all these parts are leaves metamorphosed, while in the seed-pod we often find the leaf scarcely altered, as happens in the legume of the pea. Just as the ribs in the human skeleton are so curved and disposed as to form the great pectoral cavity in which lie the most vital organs of the animal fabric, so in the pod of the pea we find the edges of the leaf so brought together as to convert it into a casket for the seeds,—the most important part of the plant, and round the history of which are concentrated all the most admirable phenomena of its existence. Leaves scarcely altered, except in texture, similarly constitute the seed-pods of the larkspur, the aconite, and that gay golden blossom of spring, called the marsh-marigold; and exactly conforming with all these are the great seed-follicles of the South American trees called Sterculias.

The great glory of the beech is disclosed however in the month of October. The leaves then assume many shades of yellow and amber, and the surface being peculiarly adapted to reflect the light of the setting sun, the spectacle, when the weather is fine and mild, is most effective. Amid the immensely varied hues supplied by oak, and

chesnut, and elm, the beech still lifts its magnificence distinct and unrivalled, and even the crown of its concluding moments has a richness superior to that of any other. Leaves, it may be well to say, assume these beautiful tints in autumn, through failure of their power to appropriate only the carbon of the atmosphere during the performance of the process of respiration. They become, in consequence, super-oxygenised, and the oxygen, as in other cases, manifests its presence by giving an unaccustomed brightness of tint. We are apt to speak of the *fading* of the leaves in autumn; it would be more truthful to speak of it as the autumnal painting. Very prone are we also to connect the idea of "autumnal foliage" with trees only, overlooking the fact that multitudes of herbaceous plants, including many of the most inconsiderable weeds of the wayside, are gifted with an equal beauty in the decline of life. No tint in nature is lovelier than the roseate amber of the October foliage of the little silver-weed, *Potentilla Anserina;* while docks and sorrels glow with vivid crimson, and the hedge-parsley turns its fern-like leaves to the colour of a king's mantle. Nature delights here, as everywhere else, to echo her greatest things in her least ones. No blind heart was that which in old time said that Pan, the god of material nature, took for his wife the nymph Echo, *he* playing on his sevenfold pipe, wrought from the reeds by the river, while *she* gave response to every harmony.

Lastly should we note the singular fruit of the beech. In May, soon after the young leaves are open, the tree is ornamented with ten thousand globular clusters, downy, and containing all the essentials of a flower; by the time that the lilac stars of the michaelmas-daisy begin to shine in the garden, these are followed by prickly pods the size of an acorn, and very curiously corresponding with acorns in structure. That part which in the fruit of the oak is a smooth-edged and hemispherical cup, in the beech is four-valved, the valves recurving like those of a chesnut; the acorn itself is represented by a triangular brown nut, with margins almost as sharp as the blade of a knife. In Spring these three-cornered seeds are prone to sprout, and among the mosses on the hedge-bank, beeches, like children at play, are found beginning the world anew.

Beeches are not like oaks, the resort of many living creatures; the number of insects frequenting them is comparatively few, nor are they much sought after by the nest-builders. A pleasing association clings to the tree nevertheless, such as we have with scarcely another, for as long as children's voices are lovely to human souls, will be their

trill of "the woodpecker tapping the hollow beech-tree." Naturalists find in connection with the beech quite another class of objects, namely, fungi of uncommon kinds, one in particular, that in autumn appears upon the trunks, and from its resemblance to sprays of white coral, has been classically named *Hydnum coralloides*. So beautiful are the plans and marshallings of nature! If to one tree be given good fruit, another excels in foliage; if one be tall and soaring, another gives sweet amplitude of shade, touching the earth with the tips of its great arms; and like the cities of a great empire, every one is noted for a merit and suite of qualities peculiarly its own.

THE ELM.

WHETHER the elm be truly an ancient Briton, or a tree originally from South-eastern Europe, is an open question. Like the chesnut and several others, it has been a resident in our island from time immemorial; there is reason to believe, nevertheless, that it is not one of those trees which, with the oak and the pine, can assert their claim to be absolutely indigenous, that is to say, growing upon British soil as one of the original gifts of nature, instead of owing its importation to the hand of man. The subject to which this question forms an opening is one of the most curious and interesting that botanists and physical geographers have to consider. It involves not only the natural laws and the accidental processes by which plants have been diffused over the face of the earth, but the problem of the primitive seats of particular species. Looking at the ancient forests and the immortal meadows, at the lilies that brighten the quiet pools and river-inlets, far away in the most secret solitudes of the country; or at the saxifrages that sprinkle the mountain-slopes with their beautiful stars of gold or delicately-speckled white,—we think most naturally that these things, or at all events that the plants which were their ancestors and progenitors, have occupied these self-same spots ever since the beginning. And doubtless this is true of very many of the forms of life that surround us. But very many others have as certainly been derived from localities more or less distant. Migration has been no less steady on the part of plants, sometimes as the result of natural causes, sometimes under the influence of man, and this, upon his part, either knowingly or unconsciously,—migration, we say, has been no less steady on the part of plants, than emigration has been with our own species. The colonizing of new lands in ancient times and in modern ones, has in every age had its silent but energetic parallel among plants. Such migration is still in progress, and perhaps more vigorously than ever before; it would seem that whatever man does, the unconscious portion of living nature does likewise—that whichever of the two takes the initiative, the other cannot choose but follow suit.

Numbers of our common English weeds have conveyed themselves of late years to distant countries, and in several cases have established disastrous empire; many pretty flowers, on the other hand, have also travelled in the wake of civilization, and where once were only brambles and hedge-nettles, now we see the quaint blossoms of the American touch-me-not, or the golden quadrangles of the evening-primrose. Even in our conservatories there are many similar instances of the wonderful love of travel that pertains to plants. Among the choicest orchids of the tropics frequently springs up that most sweet and tender little trefoil, the sleepy yellow Oxalis of the Mauritius; and in one hot-house at least that might be named, comes up every year, unsown and of its own amiable accord, that beautiful blue-spiked *Gymnostachyum* which has been dedicated, in its second name, to Mr. Cuming. A grand book might be written upon the subject exclusively of these curious wanderings; another, still more delightful, upon the confraternity that has been instituted among the different countries of the earth by the deliberate transfer of their productions from one to the other. How much does Europe owe to Asia! How much to America! How largely in turn does the new world stand indebted to the old! The walnut and the lilac tree came first from Persia; the Camellia is from Japan; the vine from the shores of the Caspian Sea. Wheat and barley are from the same opulent part of South-western Asia which tradition declares to have been the birth-place of the human family; cucumbers and melons ripened their first fruits beneath the sun of India; rosemary seems aboriginal to the northern shores of the Mediterranean. Extending our survey to America, we find that for the inestimable potato we must thank Brazil; the same great region has enriched our gardens with countless flowers of the rarest beauty; the ancient world has sent thither, in beautiful recompense, two of the most valuable of plants, those, namely, which produce coffee and rice. These are but two or three instances out of a thousand that might be cited; the narration of all would run abreast of the history of human enterprise, and, at the same moment, of nature's fair docility, a quality we should never forget or overlook. For what would the world have been had trees and plants and flowers sullenly refused to grow except in the very spots where they were first deposited! Everywhere the soil gives willing nutriment; and though the inclemencies and the asperities of certain climates do certainly prevent the universal extension of plants, the capacity of self-adaptation to an immense variety of latitudes and longitudes, remains one of the most striking facts in physiology, and

one of the finest illustrations of the Divine munificence. England, owing to this sublime power of self-accommodation on the part of plants, is now the permanent Flower-show of the whole world. True, it is through the ingenuity of the florist that very many are alone persuaded to dwell with us and to enjoy life; his success in reconciling them to their new abode comes, however, of their primitive flexibility under kind treatment, Plants, like women and chamæleons, wax bright or become dim according to the light that is cast upon them;—yet not alone by reason of the light, but because of the sweet reflecting mystery within.

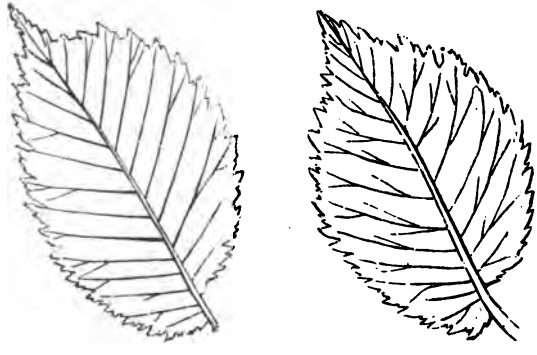
In the questioned native country of the elm-tree is involved, accordingly, no new or solitary idea; it is simply one of those which constitute the history of the interchange of hospitalities. In any case, the tree is so thoroughly rooted in old England that now it matters little whether it be an alien or otherwise. For centuries it has been linked with many of the happiest thoughts that are the privilege of Englishmen; and as long as the glory of old family mansions and of ancestral avenues shall endure, so long will the stately elm be a household word. The great height which it attains; the peculiar and gradually expanding form of the head; the grand super-columniation of the pillared branches; and the massiveness and circularity of the main stem, are qualities which adapt it more than any other for an ornament of the park and of the grounds that immediately adjoin, and more particularly still, for planting in those duplicate lines which by-and-bye develop into the Avenue,—say rather, into the living Cathedral nave; of which, let it be noted, there are no finer examples possible than in the avenues in Kensington Gardens, and that majestic one which sweeps down the slope in front of Redland Court, near Bristol, then rises again, graceful as some light boat upon the waters, every tree a tower of verdure, illustrious at every season, and when in the pride of its green summer, and slaking its mighty thirst in the drowsy sunshine, lifting up our hearts with delight and admiration. For grand old trees, such as these elms, like the stars, seem to look down into our hearts, and resting there, make them partakers of their own greatness.

Listen, too, to the inhabitants! Not always a city, but how often are these beautiful trees, the elms, the seat of a thousand birds of the dark wing! The two things seem so naturally to go together, that rooks' feathers upon the ground, so black, so clean, so smooth, so glossy, with their beautiful white and slender quills, seem almost a produce of the tree itself. To watch these birds sailing in their calm

squadrons; to note them, too, when busy in the fields; yea, even to pick up those fragments of cast plumage, is to me a peculiar pleasure. And yet it is not because of the elms; I suppose there is no human being of civilized race to whom some such simple thing of nature is not a talisman,

"Striking the electric chain wherewith we are darkly bound!"

Botanically, the elm is distinguished by its curious leaves, simple flowers, and very remarkable fruit, or, as it would be popularly called, remarkable *seed*. Botanists, however, give the name of "fruit" to the ripened seed and seed-vessel of every plant without distinction. No matter whether fit to eat or not, whether hard and dry, or juicy and tempting, this portion of the plant's produce is still the "fruit," and made thus comprehensive, the term becomes an exceedingly convenient one. The peculiarity of the leaves is that the two sides, or the portions



Leaves of Elm-tree.

separated by the midrib or spine, are not only of two different sizes, as happens also in the beech, but that the bases of the two sides spring from different points. A few examples of similar structure occur in other families of plants, but it is nowhere so conspicuous as in the elm. The lateral veins proceed in straight and parallel lines (sometimes forking a little), right away to the margin, as in trees of the oak-tribe; the margins are deeply and sharply serrated, and the apex runs out to a fine point. Sometimes there is a second projection, which is thrown to one side, making it appear as if we had a leaf and a half combined into a single blade. Ordinarily, the surface is rough, though in some varieties quite smooth; in autumn the whole substance changes to a uniform though rather subdued yellow, and for some time, during the

year's tranquil evening, bathed in the beautiful light of the declining sun, the tree presents a cheerful though never a gorgeous spectacle.

It is early in spring, perhaps, when the elm is in flower, that the eye is most attracted to its botanical traits. Often as early as Lent, and certainly by April, the twigs seem covered with hard black knots, something like ill-strung beads. Presently, in calm forenoons, when the daffodils open their golden cups, and the almond and the mezereon cover their bare branches with sweet pink bloom, reminding us of those happy little children of genius who before they have been to school, and become leafy with book-knowledge, play forth verses, and song, and Art,—producing, like the birds in spring, not from instruction, but because they cannot help;—presently, while these livelier sweet sights invite our hearts, the dark elm-knots also expand, and then we have dense round clusters of tender vases, tinted brown, and purple, and green, in delicate intermixture, while in the midst are lifted up stamens and a ruddy pistil that seems clipped out of fairy velvet. So abundant are these pretty flowers, and so deep and vinous is the hue, that when the sunbeams fall on the tree, it seems almost to purple the surrounding air. Not a leaf, not an opening leaf-bud, is to be discerned while the tree is in bloom, so that between our eyes and the pale sky there is nothing but twig and bloom. Talk not of flowers as born only of the summer. In the dreariest and coldest seasons that precede there are always plenty. It is not that flowers are wanting, but that we have not yet quite learned that *seeing*, like conversation, is one of the Fine Arts, the principles of which come by nature, but which requires culture quite as much as our capacity for writing or working out a sum in arithmetic.

By the time that the leaves are completing their green promise, mingled with them in countless numbers, are the fruits into which the pistils have ripened. Now the ruddy fur is entirely gone, and we have flat green circular plates with a notch at the summit, and a seed embedded in the centre, the whole seeming an image in little of those ancient shields that had a boss in the middle. Hanging upon the tree they seem green hop-clusters gone astray; when they fall to the ground, they lie thick as the chaff on a threshing-floor. Showiness in the detail of its parts, the elm is thus not gifted with: yet the aggregate makes amends, and is it not by the aggregate of our nature that we ourselves desire to be judged? Partly, perhaps, because of this little pretension on the part of the elm to floral beauty, the ancient Italian gardeners selected it as a living prop for their vines, giving to the tree which

nature had left with so little glow of ornament the most exquisite beauty that art could superadd. For nothing can be more charming than a tree twined over and festooned with the many-tendrilled vine, every leaf a model of elegance in form, and every bunch the *beau-idéal* of a glorious fruit. Mid all the varied and graceful uses to which the foliage of trees has been applied in Art,—the palm-leaf to form the capital of the Egyptian pillar, ivy to help in the stone foliage of the Gothic cathedral, none perhaps have been more constant, as none have been more popular, than the use of the vine-trail. "Vignettes" are so called because all such little pictures were at one time surrounded by an engraved vine-wreath, in classical language called *viticula*. The selection of the elm for the purpose above-mentioned gives occasion to very

Fruit of Elm-tree.

frequent allusion to the practice by the ancient poets, as by Virgil over and over again in the Georgics and the Pastorals. It would seem that in those days, as in the present, lovers forgot their occupations while thinking of the beloved, for thus does Corydon chide himself when he wakes to the consciousness that his appeals are vain:—

> Ah, Corydon! Corydon, quæ te dementia cepit?
> Semiputata tibi frondosâ vitis in ulmo est.

"Ah, Corydon! Corydon, what love-fever hath enslaved thee? Half-pruned is thy vine that mantles in the leafy elm!" Like a wise man, he decides to resume his legitimate occupations, "to weave, of osiers and pliant rushes, such implements as his work requires: if *this* Alexis disdains thee, thou shalt yet find another."

All the preceding remarks apply to the noble tree popularly known as the elm, and by botanists called the Small-leaved elm and the London elm, and classically *Ulmus campestris*. It is this one also which, in the south of England, has given its name to one or two "Elmtons" or

"Elm-towns," another circumstance indicating its probably exotic origin, since names of places founded upon that of the elm are very rare, while names of towns and villages founded on that of the oak and other undoubted natives are quite frequent. There is one kind of elm which is acknowledged to be indigenous—that one called by botanists *Ulmus montana*, and popularly distinguished as the wych-elm. In all characters except the technical ones found in the shape of the leaf, and in the structure of the flowers and fruit, this is a perfectly dissimilar tree. Instead of being lofty, erect, and with many tiers of columns that alternately lose and disclose themselves among the foliage, this one is comparatively low in stature, and the tree is disposed more to the spreading or horizontal mode of growth: consequently it never attains the handsome figure of the *campestris;* it is unsuited for avenues and colonnades, and takes its place better among the middle-class forest-inhabitants. Planted singly, well-grown individuals have, nevertheless, a beauty which is not to be ignored. The leaves are many times larger than those of its loftier relative, and are disposed in so elegant a manner along the twigs as to give the branches the appearance of enormous "pinnate leaves," or such as are formed after the manner of those of the Robinia. The long and curving lines produced by these, and the amplitude of surface, constitute attributes such as few other trees present, and redeem the wych-elm from any charge of absolute inferiority. The name, which is a singular one, and is often misspelled "witch," from some confusion of ideas as to the wych-elm and the mountain-ash,—a tree from time immemorial associated with witch-craft,—signifies a box or chest, and refers to the ancient use of the wood for the purposes of the rough cabinet-maker. Chaucer spells it "wiche," and by Sir John Mandeville the name is applied to the Ark of the Covenant, which, as he says "Titus ledde with him to Rome." It was also used in the sense of coffin: and coffins, to this day, it may be well to add, are largely made of the wood of the elm. The wych elm is the species that predominates in the north of England, as in the south the prevailing species is the *campestris*. The two forms abound equally in flowers, but the wych-elm is much more ready to ripen its fruit, and the description above given of the latter product pertains perhaps more emphatically to it. Herein again we have a curious bit of collateral evidence as to the *campestris* not being aboriginal to England. For it is inconsistent with the beautiful harmony of nature that a tree or plant should be located in a spot where the climate would be opposed to its free multiplication by seed cast from its own boughs.

Such multiplication occurs in the case of the wych-elm; but very sparingly or not at all, in England, in that of the stately small-leaved one. With all their willingness to accommodate themselves to new soils and to new countries and latitudes, there is of course a limit to the endurance of a plant, and we must not be surprised if, when a tree is brought from a far southern country, as the *campestris* probably was, either by the Romans or the Crusaders, it should be unable so to harden its nature as to ripen fruit with regularity, and so easily and steadfastly as to propagate itself without the aid of man, who transported it from its birthplace.

After all, it is by no means certain that the wych-elm is a distinct species. No less than seven different varieties of elm are distinguished by the analytical school of botanists. Two species, the *campestris* and the *montana*, seem sufficient, and to include all the others that have been proposed; and even these, as we say, are perhaps resolvable into a single one. The great question of the present day with naturalists, "What is a species?" seems further from solution than ever. Perhaps the wisest course is to take things as we find them, and be content with their beauty and their grace, their strength and their utilities.

THE LIME.

No tree indigenous to Great Britain presents so large a variety of pleasing features as the Lime. Less robust than the oak and chesnut; inferior in stature to the elm and fir, and in umbrageousness surpassed by the beech, in its own intrinsic and peculiar qualities this beautiful production of nature is nevertheless on a par with all, and among trees is the analogue of that happy condition of body which the Greeks denominated εὔσαρκος,—neither fat nor lean, but gracefully intermediate. In the Lime, too, we are reminded of that other elegant intellectual habit of the ancient dwellers by the blue Ægean, which led them to apply to massive and vigorous plants the epithet of "male," and to delicate and tender ones of similar profile and physiognomy, the corresponding and very expressive one of "female," The Greeks had but the faintest idea of the existence in plants of sex; the clear knowledge of this most wonderful truth belongs indeed to the last two centuries. They had sufficient appreciation, nevertheless, of the universal dualism of nature, to speak of things in a certain vague and general manner as masculine and feminine; and hence to this day, and every day, we have in use the pretty names "Filix-mas" and "Filix-fœmina," or shield-fern and lady-fern. Whatever learned nomenclators may choose to call them, Aspidium or Lastræa, Asplenium or Athyrium, these beloved old names will never die, but live for ever, like the green plumes to which they are bound. Filix-mas in the sweet recesses of the woodland, making great circles of curving leaves that remind us of the war-feathers upon the head of an Indian chief; Filix-fœmina by the side of the waterfall, and where streams bubble and gurgle, and the forget-me-nots put on their turquoises,—what thousands of pleasing moments have these two admirable plants supplied to man and woman, after whom they were baptised;—what thousands, too, of happy moments will they yet provide; and though mostly through their own original and immortal spell—that harpooning power which such excellent beauty as theirs always possesses—not alone will it be through *this*, but mediately through their names, which attract and give life where "brake" and "spleen-wort" are feeble and voiceless.

In the Lime, we say, the thought of this fine old habit of the classical ages is awakened, and not less forcibly than that of the felicitous Greek adjective; for the lime is one especially of the feminine class of trees. The oak, the elm, the chesnut, the beech, are masculine in contour and quality; the lime, the birch, the ash, are, like the acacia, no less emphatically of feminine look and attributes. Wanting the light tresses of the acacia, the most feminine of all trees; wanting the white limbs of the "lady-of-the-woods," the lime is still fashioned after the sweet ideal which the others disclose in leaf and stem; and if we cannot single out, in a mechanical and prosaic manner, a speciality which shall at once decide its claim to be placed in the feminine section, that comes of the perfect manner in which the qualities of this beautiful tree are intermingled and adjusted.* Is it not just so with a true woman,—the ultimate and crowning perfection of all those amiable features and qualities which in plants and flowers have a sweet foreshining? For here the heart is appealed to and satisfied, not alone by red and white, such as an artist can apply; not alone by gentle demeanour, which may be practised for the stage; not alone either by kindly words and fair courtesies and generosities, but by that matchless combination of all these, and many more things, for which there is only one name,—a true woman.

Botanically considered, the Lime-tree is less known as a tree of the woods and forests than of parks, pleasure-grounds, and gardens. It is very frequent also as an ornament of squares and open spaces in towns and cities, as witness those delightful avenues past which the visitor makes his way towards Bristol Cathedral. In the woods, however, occurs, and in some parts of England very abundantly, a form of this tree with much smaller and thicker leaves, the green of which is at the same time considerably darker, and which is usually distinguished by authors as the *Tilia parvifolia*, the lime of the park and garden bearing the name of *Tilia Europæa*. In gardens and arboretums is likewise met with a third form, technically distinguished as the *Tilia grandifolia*, the leaves being very considerably larger, and remarkably pale and downy upon the under-surface. Whether these three forms be distinct "species," let those pronounce who can define what a species is. It is sufficient for all ordinary and useful purposes to regard them as strongly-

* In speaking of the Lime as a "feminine" tree, of course we do not mean that, like the female plants of willows and poplars, it is female in *sex*. Every blossom, and consequently every individual tree, is in the most perfect sense bisexual, every blossom having its own pistil and many stamens.

accentuated utterances of a single idea, and with this understanding alone is it correct perhaps to speak of the *Europæa* as a native of our own island. In any case, the *Europæa* has been in England so long as now to have become perfectly naturalised; and the *grandifolia*, though far less abundant, and at present still possessing the aspect of a guest, will no doubt become so likewise in the course of another century. Centuries, though they express a great deal in the history of human life, simply mark spacious periods in the chronology of trees. All three forms correspond pretty nearly in general figure. The tree is symmetrical, with a solid but rather short trunk; the general outline, viewing it from a distance, is roundish or ovoid, and in aged individuals, the lower branches, which are then often very massive, are prone to bend to the earth, the extremities resting upon the grass, so as to form a green canopy or natural tent, after the manner of certain varieties of other trees that are styled "weeping." A lime of this description stands upon the lawn at Oulton Park, Cheshire, and is justly esteemed one of the most striking and beautiful trees in the whole county. When favoured by soil and situation, the dimensions that the lime can attain are prodigious. At Moor Park, there are, or were a few years ago, some individuals of remarkable magnificence, the head of one being more than 120 feet in diameter, and the stature more than 100 feet. The trunk of this tree is in circumference no less than eight yards! As regards the possible *longevity* of the lime, what this is may be judged from the fact that at Trous, in the Grisons, there existed, in 1798, a lime which was celebrated as far back as A.D. 1424, and the age of which, in 1798, could not have been less than 580 years.

The particular features of the Lime are found in the crowding of the heart of the tree with brushwood when somewhat advanced in life; in the buds, in the shape of the leaves, in the flowers, the honey, and the fruit. Lest in referring to the "fruit" there should arise any misconception, and the sour-juiced "lime" of the West Indies be thought of, let it be understood, before we go further, that that invaluable little lemon is the produce of an entirely different tree, a first cousin of the orange and the citron. Let it also be mentioned here, that the genuine and original name of the tree we are considering is not Lime, but *Line*, or more properly, Linden,—a name referring to the use of the tough bark for making mats and cordage. Under the name of "bass," or "bast," gardeners use vast quantities of this material for tying up plants. Were the tree always called by its much more elegant and poetical name of Linden,—Chaucer's own name for it on two occasions at least,—

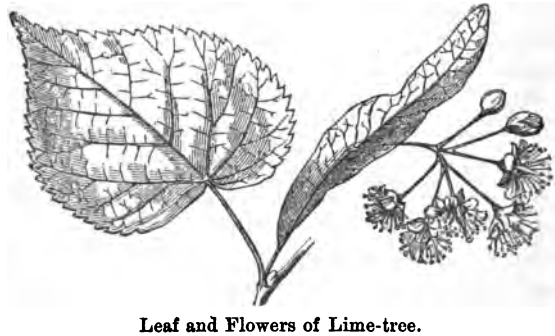
confusion would never arise. Even "teil," the name under which it is mentioned in the Old Testament (if the Hebrew be rightly translated), and which is a modification of *Tilia*, would be better than the barbarism, unfortunately now too deeply established for eradication, which requires us to write *m* instead of *n*. What may be the origin and signification of the name *Tilia* itself, is obscure. The word occurs in Virgil and other authors of old Rome; but by the Greeks this tree was called φιλυρα. Virgil's allusions are to the honey yielded so abundantly by the flowers, and to the value of the timber for purposes where lightness is a great merit. Hence his expression "tiliæ lenes," the smooth-grained lindens. In our own times the wood of the lime-tree is valued chiefly for its use to the carver. Grinling Gibbons, the most celebrated wood-carver this country has produced, usually employed it for his more delicate and elaborate work, specimens of which, nearly two hundred years old, are preserved at Windsor Castle, at Chatsworth, and in St. Paul's Cathedral, the lines sharp as when they came from his dextrous fingers. Architects find it serviceable for models of intended buildings; the makers of piano-fortes also use it for sounding-boards, since this wood does not warp with the changes of the atmosphere.

The peculiarity referred to in respect of the twiggy thicket in the centre of limes that have attained maturity, is one not observable in any other British tree. So dense is the mass, that to climb a full-grown lime is nearly impossible. That which renders the tree inaccessible to boys and men converts it, however, into an asylum for little birds, and beautiful is it to observe how, when chased by a hawk or other enemy, the fugitives take refuge in the tangle. No doubt a similar asylum is provided in many other ways by the kindness of nature, which means, of course, the goodness of Him who takes care even of the sparrows; but it is in the lime that, as a large tree, we are made most powerfully sensible of the precaution for their safety. I do not know anything in nature that can give more delight to a kindly and loving heart than the contemplation of its *safeguards*. Food, drink, warmth, sunshine, fresh air, seem to come almost as a matter of course. Except under occasional and exceptional conditions and circumstances, of these things there is always plenty; but asylums, places of security and retreat, have to be specially considered and prepared. Rarely, however, do we see the preparation set forth conspicuously. As a rule, that beautiful primitive law of the world and all its contents, that nothing shall exist for itself alone, but always for the sake, at the same time, of some *other*

thing, which shall be the happier and the richer for it,—as a rule, I say, that beautiful law is here again exemplified and declared, and even the weed and unconsidered wild-flower, things that seem useless, become houses of refuge. See how the little fishes hide their silver coats among the water-flags! See how the lizards of the seaside sandhills, emerald-green and tawny-grey, agile as thought, quick-eyed and docile as love, dart to the speary grass that grows like a mimic wheat-field in those wild and trackless deserts! "Deserts" did we say? When a thousand forms of life, brilliant beetles, cased in armour of bronze and crimson; fairy-like butterflies, whose wings are azure above, and beneath dotted with jewels; birds that lift up cheering voices, and lay down pretty feathers;—when the golden-flowered and fragrant galium, and the milk-white cups of the grass-of-Parnassus, make a desert, then let the haunt of the lizards receive this name—in England always thoughtless, and usually unjust.

By its Buds the lime-tree may be told in earliest spring. While those of the oak are ovoid and amber-tinted, and those of the beech like little brown spikes, those of the lime are short and thick, and of a decided reddish-colour. They nicely illustrate the facility with which accurate botanical knowledge may be secured at seasons when many people think that botany is impossible, because there are "no flowers." True, it is by the flowers and fruit that the last and most intimate knowledge is gained; but to neglect the buds and other early and anticipative parts, is to behave as if the study of man consisted only in the contemplation of his maturity, and the golden preparations that make childhood were unworthy of note. Nothing can be known, even approximately, unless it be watched *during development*. The best part of the history of life is that of its changes, for wherever life is normal and progressive, as all life was intended to be, every change must needs be marked by something new, and relatively more beautiful than any event or state that has yet been registered. Life that is not so characterized, is miscalled; it is decay, and not vitality,—the grave that is ahead, and not the fruitage life was always intended to receive. Think back only the last seven years of your existence! Can he who during the lapse of those seven years has not gained alike in faith in the Infinite Wisdom and Goodness, in love of the beautiful in God's works and the human heart, in the estimation of his friends, and in his own self-respect, be said to have *lived?* I trow not. Changes he must needs have experienced, but changes that do not elevate must needs degrade.

The Leaves of the linden form one of its prime characteristics. They are simple and undivided, in general outline roundish, but with the extremity long drawn-out, and at the base remarkably unsymmetrical. While in the elm (the leaf of which is also remarkable for its want of symmetry at the base), the two halves spring from different points, here, on the contrary, in the lime, they spring from the same point, but one of them is much larger than the other, and a curve is produced backwards, or in the direction of the petiole. Hence we get in the lime-tree the first example of that most elegant configuration which culminates in the leaves of the Begonias, and in the leaflets of the exquisite plants called Epimedium: so constantly does nature always announce beforehand that which by-and-bye she intends to show forth illustriously. Everything below the highest form is a prelude and a proëm; the melody tried first in a minor key. The stalks which sustain the leaves are longer than in most other trees, and to this is no doubt owing much of that ease and lightness of aspect which places the lime among the feminine trees. The leaves are smooth also, and glabrous or nearly so,



Leaf and Flowers of Lime-tree.

except in the *grandifolia*, but in the angles of the veins, upon the undersurface, may be observed curious little tufts of light-brown velvet. Spring is not long without them, though they are by no means among the earliest, and like several others which delay their advent, they are uncareful to remain to the end. The end, in truth, they never see, for, though exceptional individuals may retain their foliage till November, as a rule, the lime leads the way in surrender to the cold; the track of the yellow-sandalled autumn is found first amid its boughs.

> Those virgin leaves, of purest vivid green,
> Which charm'd ere yet they trembled on the trees,
> Now cheer the sober landscape in decay,
> *The lime first fading.*

Next, as to the Flowers. These, in the linden, differ materially from those of trees that bear catkins, and correspond closely with such blossoms as those of the apple and pear, wanting only in gaiety of tint. A glorious spectacle is it to go beneath a linden in full flower, and *look up*. This is the only way in which its amazing wealth of bloom can be discovered and understood, for such is the disposition of the foliage and of the flower-peduncles, that at a little distance, the tree seems to be no more than prettily dappled or variegated; viewed, on the other hand, *from below*, it is a very heaven of fragrant honey-cups. That favoured characteristic of the violet which has made this flower, with the poets, the emblem of modesty, is not more marked in the little hedge-row blossom than in the deep-hearted and lady-like linden, which surpasses, too, all trees that grow in England, in benevolence to the bees. Who, in regard to this, does not remember the good old Œbalian in Virgil?—"Here planting among the shrubs, white lilies, vervain, and esculent poppies, he equalled, in his contented mind, the wealth of kings. The first was he to pluck the rose of spring, and the first to gather the fruits of autumn; and even when sad winter split the rocks with frost, and bridled the current of the streams with ice, yes, in that very season was he cropping the locks of the soft acanthus.* Lindens had he, and pines, in great abundance; he, therefore, was the first to abound with prolific bees, and to strain the frothy honey from the well-pressed combs."†

Our English poets freely refer to the honey of the lime, especially the class of writers represented in Mrs. Hemans and L.E.L. Cowper adverts to it—

> The lime at dewy eve
> Diffusing odours.

And though not in relation to this particular circumstance, we have the tree mentioned also by Lord Byron, in "Lara." Prose writers likewise not unfrequently introduce the lime, as much for this reason, no doubt, as for any other, when they would suggest ideas of graceful form and of a delicately-scented atmosphere; Fenelon, for example, in his description of the enchanted island of Calypso. To a mind of

* Several plants, with the ancients, bore the name of Acanthus. That one to which the name is here applied, appears to have been that beautiful and curious variety of the common holly which, instead of bearing bracelets of scarlet berries, produces *yellow* ones. That it was certainly a berried and evergreen shrub, appears from the allusions in Eclogue, iv. 20; and in Georgic ii. 119.

† Georgic iv. 131—141. See also iv. 183, where the bees "feed on the glowing crocus and the luscious lime."

pure and elegant tastes, the lime always appeals powerfully, and perhaps it would be no error of judgment to deem preference for it one of the instincts of an amiable and tender disposition, such as admires the grand and stately, but still best loves the little and the pretty. When the bees have access to large numbers of limes, so that the storage in their waxen cities has been derived principally from this source, the flavour and quality of the honey are particularly good, and quite as marked as when these creatures feed extensively upon the heather, or upon the aromatic plants of the Labiate kind, to which latter is owing the peculiar and exquisite flavour of the honey of Narbonne. In some parts of Lithuania there are forests composed almost exclusively of lime-trees. The bees gather their harvest with rapidity, and the combs being almost immediately removed from the hives, the flavour is preserved pure, and the inhabitants realise large sums by the sale of what the insects have so assiduously collected.

The whole subject of the production of honey by flowers is very pleasing. There are few probably by which a less or greater quantity is not yielded, since the presence of this substance appears to serve as an attraction to many little creatures of tender wing, who, rifling the blossom, and rambling about in it, help to convey the pollen from the stamens to the pistil, and thus unconsciously help forward the great function of reproduction. How beautiful are these various steps in the exquisitely-adjusted economies of nature! The earth, while shone on to-day by the self-same stars which delighted the eyes of the first members of mankind, is enriched also with the descendants of the identical trees and flowers which excited their curiosity and delighted their affections; and descendants of the now existing individuals will no doubt carry on for ever, in one unbroken stream, the loveliness that every summer renews. How is this effected? Solely and absolutely through the instrumentality of the apparatus we call the "flower." The flower, in turn, needs that its parts shall be lightly touched, as when the musician runs his hand over the harp-strings; they who touch so tenderly are the unconsidered little visitors and dwellers whose presence is often thought an intrusion; and *they*, it would appear, are invited and sustained by the nectar that lies in the inmost heart of the flower. Usually the honey is not placed in any special receptacle, but lies in the base of the blossom, round about the feet of the stamens and pistil, just as we see green mosses forming a pretty encircling bank round the base of the trunk of an old tree in the wood. There are plenty of examples, however, of such special cups or vases for it, and these are

of the most beautiful and curious diversity. In the crown-imperial the vases are like round white eyes, six in every flower, or one to every petal; in the grass-of-Parnassus they constitute the palms of most elegant little hand-like bodies, every one of which is provided with an uneven number of fingers, usually either eleven or thirteen, so that the central one shall stand higher than the others, which gradually diminish in height as they are further and further from the middle. In the aconite, again, the honey-cups resemble two little birds, and in the hellebore they remind us of certain bivalve sea-shells. The lime-tree is one of those plants in which no special provision is made for the care of the honey: in botanical language, although brimming with nectar, the flowers are unprovided with "nectaries." Keen was the appreciation of the old naturalist who adopted this classic term into the language of phytology. The pleasant beverage feigned in the most ancient times to be the drink of the gods, might well have its appellation transferred to that which gives new charm to the loveliness of the flower. Virgil's immortal description of the bees must furnish us yet once again with an illustration:—"Some address themselves to the gathering of food, and by fixed agreement have their occupation in the fields; some deposit within the inclosure of the hive Narcissus' tears,* and clammy gum from the bark of trees, for the foundation of the combs; then build into arches the viscid wax. These, on the other hand, bring up and tend the younger ones, the hope of the nation; others again, distend the cells with liquid nectar."†

One other circumstance connected with the lime deserves mention: it is one of the trees upon which the mistletoe occasionally grows. The limes in the Home Park, Windsor, are, or were a few years ago, richly adorned with it; there are other examples in Bushy Park, and in the avenue at Hampton Court; and at Penshurst Park, in Kent, with doubtless very many more, in different parts of the country. History connecting the mistletoe so especially with the oak, it is well to know

* The flowers of the daffodil and other species of the genus Narcissus are provided, as all who know these plants will recollect, with a peculiar cup in the centre. These cups, mythology tells us, contain the tears of the fabled youth whose name they bear,—

Narcissus pining o'er the untainted spring,

and are beautifully alluded to by Milton, in Lycidas,—

Bid Amaranthus all his beauty shed,
And daffodillies fill their cups with tears,
To strew the laureat hearse where Lycid lies.

† Georgic, iv. 158—164.

that this famous parasite grows upon nearly a score of other kinds of tree, including the maple, the ash, the poplar, the apple and pear, the hawthorn, the white-beam, the service, the willow, the hazel-nut, the Robinia, the holly, and the walnut. In summer we seldom notice the mistletoe. Concealed by the foliage of the tree it inhabits, not until autumn has stripped all away, and winter has rendered the woods transparent, and the splendours of the ivy and holly are disclosed, do we discover its presence. Then how beautiful the contrast of its innumerable green quills and glistening pearls, with the dark-brown armour around and below,—all of those stalwart foresters that lies open to view. Then, too, how beautifully is suggested to us the value and excellence of *deciduous* things, for were all mantles to remain for ever, how much should we remain unconscious of! Light and summer, that reveal so much, hide even *more*. Darkness, that we think so dreadful, takes us away from earth to the heavenly lamps, and that which till now was silent, begins to speak.

THE POPLAR AND THE WILLOW.

INNUMERABLE phenomena in nature testify to its harmony with man and all that pertains to him. Every circumstance of his animal life, from the cradle to the edge of the grave, is in one way or another mirrored and duplicated; no matter of surprise is it, then, that at every turn we are met by examples of close relationships among Trees such as are calculated to remind us of the ties which constitute families among ourselves. One of the special occupations of the botanist is to determine the affinities that plants bear to one another; to notice, that is to say, the resemblances which subsist among them, and to bring together, as far as pen and paper, and the *hortus siccus* and the Botanic Garden will allow, those which most nearly resemble in essentials. This is the "delightful task" for which, after rearing "the tender shoot," he finds a long life-time give opportunity for only a very partial fulfilment. It is pure and enduring enjoyment nevertheless, since every day and hour he learns more and more the significance of that beautiful word Unity.

By reason of these concordances and agreements it is well that in our present survey the Poplar-tree and the Willow should be taken together. Members of a great family distinguished from all others by producing a portion, if not the whole, of their flowers, in those pretty pendulous clusters called "catkins," these two are still isolated and characterised by a peculiarity of their own. While all other species of "Amentiferæ" have their stamens and pistils produced from different buds upon the *same* tree, these two races, the poplars and the willows, have their two kinds of flowers not only developed from different buds, but the two sets of buds are confined to different trees! In a word, to adopt the technical language of the schools, poplars and willows are "diœcious," while all other trees that bear catkins, or those at least which belong to the Amentiferæ, are "monœcious." These terms were contrived by Linnæus in that happy spirit of poetry which gives force and feeling to all true science, the idea conveyed in them being that trees are houses, the inhabitants of which, like human beings, are male and

female, the monœcious kinds answering to households such as contain representatives of both sexes, while the diœcious kinds are noted for their inhabitants being of only *one* sex. There are plenty of herbaceous plants which illustrate the same economy, especially in the class denominated "sedges," and of these also there are examples both of the monœcious and of the diœcious structure. Some botanists are

Willow.—Female flowers.

Willow.—Male flowers.

inclined to consider these plants, poplars, willows, sedges, and the like, of higher position in the scale of nature than such as are bisexual, or formed like the apple or rose. If resemblance to the animal economy in this respect be paramount, of course there can be no demur; but resemblance to animal powers and functions exists in plants under so many different aspects, and is often so rich and startling, and in a different way every time, that no particular plant can be selected without ignoring equally just claims by many others. What, for instance, becomes of the sensitive-plant, with its marvellous susceptibility to touch; what of those strange vegetable carnivora, the Dionæa and the sundew, the Nepenthes and the Sarracenia,—plants which are so organized as to capture insects, and remind us of predatory birds and quadrupeds? No one plant, no race of plants, is in all particulars preëminent, nor is any one kind nearest to man, or even to animal life. Nature is everywhere the echo and solution of its lord and master, therefore touches him, in its phenomena, at every point.

Not only do the poplar and the willow agree, among the Amentiferæ, in being diœcious, and thus differ from all their congeners; their fruit or seed is also perfectly distinct from that of any other species of the family, and by this alone, in the time of its ripeness, may they be identified. While the oak, the beech, and the hazel, yield some kind of acorn or nut, round as an egg, or curiously angled; and while the birch and the alder supply, as it were, a mimic cone, imitating, afar off, the sculptured produce of the pine-tree; these two, the willow and the poplar, prepare elegant clusters of little capsules, from which, as soon as they burst, is discharged an immense quantity of the whitest

Poplar flowers.

vegetable silk. Unfortunately, the fibre is so short as to render it unavailable for manufacturing into thread, or yarn such as would be adapted to the requirements of the weaver; in its usefulness to give softness to cushions and pillows it is nevertheless unequalled and unapproached. The clusters of poplar seed-capsules are exactly of the figure and general appearance of bunches of currants, though usually much longer, attaining ordinarily four or five inches. While green, every capsule is perfectly spherical, bursting in due time, by a vertical and even crack, into two little halves. The capsules of the willows, on the other hand, are densely packed; individually they are conical, and, when they burst, the two canoe-shaped and sharply-pointed halves are gracefully recurved. There is a further distinction found in the clusters of stamen-flowers. The little scales by which the stamens are shielded are in the willows smooth-edged, but in the poplars torn and ragged; and while in willows the stamens seldom exceed two in number, in poplars they are at least eight, and sometimes many more.

These delicate distinctions are rendered necessary in Botany by the frequently strong resemblances which subsist in the architecture and in the profile of plants, and judging by which alone, we are liable to be led into error. Moreover, by carefully observing them, we find that many things which apparently have little connection, prove in the end to be most intimately related, and a capital hint is offered as to pre-

cipitancy in decision, with regard to matters far more noble and vital than trees. How common, for instance, the belief that the name of "poplar" applies legitimately only to that tall and spire-like and most unsociable tree which is everywhere seen lifting itself in suburban gardens, or forming a kind of colonnade in the hedgerow. Yet this is only one out of many kinds of poplars, and neither the most important kind nor, strange to say! of the same antiquity as the others. The "Lombardy poplar," by which name this spire-shaped one should always be called, is only a variety of the good old-fashioned "Black." Like the spire-shaped variety of the common yew, and the similar variety of the furze-bush, it is a sport of nature in comparatively recent times, showing over again, how full alike of play and flexibility is that beautiful old "spirit of the woods" which the ancient poets half-deified, converting the trees into a sisterhood of dryads. Though by no means a pleasing object when standing alone, the Lombardy poplar, judiciously intermingled with other trees, gives an air that no other so well supplies, conferring upon the grove that same beautiful addition which is given to the view of a distant city by its towers and spires. Contrasts lie at the heart of all our enjoyments, and it is only by such intermixtures of umbrageousness and slender loftiness that the *beau idéal* of sylvan charm is originated in wood and forest.

The poplars botanically so called, comprise not only this common spire-like tree and its widely-branching parent, the "Old English black," but also the abele and the aspen. Besides these European, or at all events Asiatic forms, there are several species indigenous to North America. All, except the latter, agree in the very curious peculiarity of having their petioles or leaf-stalks laterally compressed at the extremity next to the blade. Hence arises that pretty and incessant fluttering which has made a proverb of the aspen, and which finds mention even in the sacred records, though apparently connected, through a mistranslation, with an entirely different tree. "When thou hearest a sound of a going in the tops of the mulberry-trees," should by rights be "in the tops of the *poplar*-trees." Placed alongside of the leaves of their near relations, the willows, poplar leaves are found to be, as a rule, scarcely longer than broad, where widest; the leaves of willow-trees, on the other hand, as a rule, excel considerably in length. It is worthy of notice too that while the leaves of poplar trees are exceedingly prone to become vegetable skeletons, lying as they do, in this condition, often by hundreds where poplar trees abound, those of the willow decay in every part at once, and yield none of the

delicate tracery so remarkable in the others. Lastly, there is a curious contrast in the aspiring tendency of the poplar and in the "weeping" inclination, not only of the famous willow of Babylon, but in several other representatives of the genus. The last-named feature has obtained for the willow a place in the "Language of Flowers." When the poet would picture sadness, he needs only to cite this drooping and sorrowful tree; the very name is a synonyme for grief beyond assuaging. How deep the meaning, for instance, in the description of poor, forsaken, desolated Dido,—

> In such a night,
> Stood Dido with a willow in her hand,
> Upon the wild sea-banks, and waved her love
> To come again to Carthage.

In pictures such as these we have the sign of the true and immortal Poet, who, without wordy delineation of the varied passions that may fill the heart, presents to us, in a single phrase, a perfect idea of its condition. Even the erect kinds of willow have none of that pretty cheerfulness about them which belongs to most other trees. Although the springing of the willows "by the water-courses" is used as an illustration of gladness and prosperity, still they seem by nature intended for association rather with times of mournfulness than of joy. Possibly this may arise from their being so very generally located by the water-side, on the banks of slow streams and rivers, where the mind becomes attuned to melancholy, and the very reeds convey utterances of dejection. Hence, it would appear, the very frequent connection, both of the willow and the poplar, with events that have a hue of trouble, in the legends that have been bequeathed to us by the ancient fabulists. When the sisters of Phaeton, inconsolable for the untimely end of their brother, were by the pitying deity transformed into trees, poplars were made the memorial, and to this day, every spring, the tears of those unhappy ladies reappear upon the opening leaf-buds. It was upon a poplar that poor Œnone found the inscription left by her faithless lover; it is with a poplar that Virgil connects his exquisite image of the nightingale robbed of her nest:—

> Qualis populeâ mœrens Philomela sub umbrâ
> Amissos queritur fetus, quos durus arator
> Observans nido implumes detraxit: at illa
> Flet noctem, ramoque sedens miserabile carmen
> Integrat, et mœstis laté loca questibus implet.

"As the mourning nightingale within a poplar shade grieves for her lost young, which the ruthless ploughman, espying in her nest, has

stolen away unfledged. But *she* weeps throughout the night, and seated on a bough, still renews her sorrowful song, and fills all the air with piteous wailings."

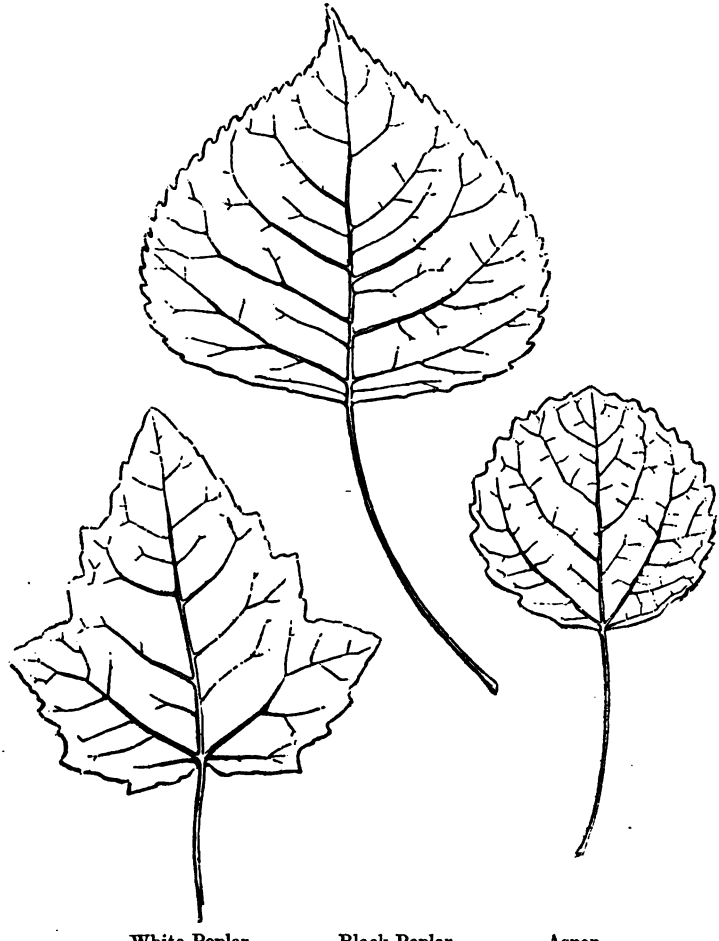
Similarly, with the willow we find connected, among others, the beautiful fable of Arethusa, whose bathing in a stream overhung with these trees, mingled with poplars, led to the events that caused her transformation into the spring which retains her name to the present moment. Transferring our interest from the remote past to the days of Hamlet, how beautifully again is the willow introduced in the account of the death of Ophelia :—

> "There is a willow grows ascant the brook,
> That shows his hoar leaves in the glassy stream;
> * * * * *
> There on the pendent boughs her coronet weeds,
> Clambering to hang, an envious sliver broke;
> When down her weedy trophies, and herself,
> Fell in the weeping brook. Her clothes spread wide,
> And mermaid-like, awhile they bore her up,
> Which time she chanted snatches of old tunes,
> As one incapable of her own distress;
> Or like a creature native and indued
> Within that element. But long it could not be,
> Till that her garments, heavy with their drink,
> Pull'd the poor wretch from her melodious lay,
> To muddy death."

The great botanical distinction between the willow and poplar, compared with all other trees of ordinary occurrence, has been mentioned above. The discrimination of the particular kinds of willow is not so easy, the species being numerous. The larger kinds, natives of Great Britain, may be told by their very long and narrow leaves, tapering to each extremity. In the common willow, *Salix fragilis*, so named from the readiness with which the young branches break away from the main bough, the leaves are green, without admixture of grey: in the white willow, *Salix alba*, on the other hand, every leaf is clothed on both surfaces with white and silky hairs, which give it the hoary appearance alluded to it by the poets.

Besides these, there is the shining bay-leaved willow, *Salix pentandra*, which has all the gloss and lustre of some fine evergreen, and exudes a delightful aromatic odour, from glands along the edges of the leaves. The large and yellow catkins contribute also to render this tree very ornamental in early summer. The poplars are few in number, and at once told by the shape and colour of their leaves. Those of the abele,

or white poplar, are angularly toothed or lobed, and covered upon the under-surface with a grey and felty substance; in the black poplar they are perfectly glabrous, and nearly triangular, without angular lobes; in the aspen they are likewise glabrous, but circular, or nearly so, and



White Poplar. Black Poplar. Aspen.

with coarse indentations. The epithet "black," it may be useful to observe, is applied to the kind of poplar so designated not because of actual nigritude in any part or portion, but as an antithesis to "white," the well-deserved epithet of the abele. A similar antithesis gives the

name of "white" to certain varieties of grapes; and of "black-thorn" to the snowy-flowered sloe, the epithet in this latter case signifying leafless, as opposed to leafy. Whether all three of the European poplars be aboriginally and veritably British is, after all, not quite decided. These trees extend so far to the East, and so early attracted the attention of travellers and transplanters, that it is quite possible they may have been introduced in the first place from Asia. Support is furnished to this idea by the etymology of the name, which would seem to be radically identical with "peepul," the name given in India

to the sacred fig, *Ficus religiosa*, and which latter would be extended to the poplar because of the resemblance, as to general figure, in the leaf, though the trees are not in any degree related in regard to structure.

The willows, that is to say, the "crack" willow, *Salix fragilis*, and the white willow, *Salix alba*, are probably, in the full sense of the word, indigenous. Our English climate suits these trees well, together with the smaller kinds familiarly known as osiers and withies, which useful contributions to the necessities of the basket-maker are chiefly furnished by the *Salix viminalis*. How long basket-making from osiers has been practised in our island, may be judged of from the fact that the very word "basket," is, with a trifling difference in the spelling, the very

same that was used here two thousand years ago. No one after this will demur to the osier, at all events, being native. The word in question is one of the very few ancient British terms that have lived into our own modern English. It is preserved, in its Celtic form, by the Roman poet, Martial, one of whose epigrams, freely rendered, runs as follows:—

From Britain's painted sons I came,
And "basket" is my barbarous name;
But now I am so modish grown,
That Rome would claim me for her own!

The shields and coracles of the ancient Britons were also made of wicker, osier-work having apparently been with this rude and simple people just what papyrus-work was with the ancient Egyptians. It is this self-same plant which, with the *Salix Capræa*, and one or two other species, has now for ages borne the name of "palm," or more properly, "palm-willow," being usually in full bloom on Palm-Sunday, and thus available for use where the ancient emblematic practice of carrying or "strowing" palm-branches cannot be carried out with the leaves of the genuine tree. The veritable palm is used upon the shores of the Mediterranean; as we recede northwards, other plants must needs be substituted, and at last, in England, the palm-willow proves efficient.

In Rome, upon Palm-Sunday,
They bear true palms;
The cardinals bow reverently,
And sing old psalms.
Elsewhere those psalms are sung
'Mid the olive branches;
The holly-bough supplies their place
Among the avalanches!

So it continues, every different climate and country supplying for the occasion some cheerful stalk of green or yellow, England in its turn contributing the willow. Rosalind knew this tree when she entered the house exclaiming—"See, what I have found upon a palm!"

THE YEW.

In strong contrast with all other trees indigenous to the British islands, stands, by reason of its poisonous foliage, the sombre yew. Were not a single example of deleterious properties to exist among our trees, it would at least be in exception to the remarkable and significant rule that everything in nature shall have its dreary side. Thank God, it is left to our own option to turn from the darkness to the light, and to shelter below branches that are not only innocent but liberal. Who would expect that among grasses, the sweet pasture of innumerable kine, and in their larger forms, the source of corn, there is yet one to be found with the taint of poison in it; and that abreast of the lilies there is a flower freighted with death? Such, however, is the fact, and darnel and colchicum are but illustrations and prefigurements, in their respective provinces, of the mournful truth that comes out so strongly in the consideration of the yew. Not that the berries are poisonous, for these, though viscid, and with no peculiarly fine flavour to recommend them, may be eaten with impunity; it is in the leaves that the hurtful juices are contained, after the same manner as in the laurel, the little plums produced by which are innocuous, though extract prepared from the leaves is speedily fatal. Probably it is in some measure from this poisonous quality that the yew has been so often associated with death and churchyards;—

> Cheerless, unsocial plant, that loves to dwell
> Midst skulls and coffins, epitaphs and tombs.

Remember, however, that it is man who has placed it in such localities. Nature gives the yew a very different abiding-place from the cemetery, and rightly viewed and understood, perhaps the yew may prove after all, notwithstanding its possession of deadly sap, to be a tree that should contribute ideas rather of cheerfulness than of mourning. Upon rugged limestone scars and cliffs, where nothing else, save a little ivy, can establish anchorage, the yew is often seen clinging, as if bound to the rock with clamps of iron. Well-nigh flattened against the perpendicular face of the stone, and with the merest ledge or crevice for its feet, it

holds itself unchanged for centuries, and is the most imposing picture nature affords of imperturbable endurance. So, too, upon many a remote hill-side, beaten and ravaged by tempests; exposure to the wrath of the elements seems congenial, and to live in the midst of perils, joy and strength. Being an evergreen too, it contrasts finely with the deciduous trees that ordinarily are not far off, or that circle it as companions; even with other evergreens it has a contrast such as no other developes, since the young growth which makes its onward push in the spring, is of the same unyielding tint as the oldest foliage.

Once a year, at least, we see all other evergreens decked with light and pretty shades of verdure, indicating the flow of their annual tide of life; the yew, inexorable to the last, gives no register of the seasons, and makes no comment on their lapse. Only for a brief period, when the fruit, looking as if wrought of chalcedony, crimsons before the last sunshine of the autumn, does the yew seem affected by nature's kindnesses and genialities. Instead of an emblem of death and sorrow, it should stand, therefore, as the representative of intrepidity and the impregnable, and I cannot but think that some such view of its true significance must have actuated those who either laid the foundations of their churches and abbeys close to existing yews, or who having raised such buildings, then planted yew-trees close alongside. For what more sublime picture of the endurance of God's kingdom could be selected, or what emblem more exact of the immortality of man? To this day stand the three old yews beneath which the founders of Fountains Abbey sat themselves down in rural council. Ages have passed away since the sound of vespers fell from those beautiful aisles upon the ear of the wayfarer who lingered to gather cowslips in the meads around, or to note the tender blue of the innumerable forget-me-not, or to mark the flow of the tranquil river, and its darting fishes;—everything is gone except the sweet and solemn requiem pronounced by ruin,—everything except those grand old trees, which seem capable of witnessing the rise and fall of just such another fabric, were some architect to tempt them with renewal of the old magnificence.

It may be useful and practically good to deem the yew an emblem of death. We are taught here, as in a thousand other places, that it is better to deem it an emblem of the changeless, that is to say, of Life. Nothing is lost, and everything is gained, by letting nature speak to us, whenever she will, of immortality. The lesson of death and decay is too plainly and too constantly recited to make it needful that we should go out of our way for illustrations; much more should we refrain from

converting symbols that are inherently suggestive of good into emblems of what is only too familiar in its reality.

Botanically considered, the yew holds a place in nature shared by only a small company. Plain and palpable as are the great classes and families into which plants are resolvable by men of science, every one of them a solar system as it were, in miniature, certain grand ideas of structure constituting centres round which minor ones are disposed planet-wise,—plain and palpable as are these great classes in regard to their centres, and the mass of their elements, there are located upon the frontiers of all, without exception, certain curious forms which give a hand, so to speak, to either side. Just as whales link mammals to fishes,—living in the ocean, like sharks and dolphins, yet suckling their offspring after the manner of female quadrupeds; just as bats connect mammals again with birds; and just as those comical little creatures, the armadillos, connect, still once more, the mammalia with the reptilian races;—so among plants do certain strange organisms stand midway between the especially great and obvious classes, and constitute the bridges whereby all things are maintained as a unity. The Conifers, to which the members of the yew-tree family stand as a kind of appendix, have for one of their own ennobling functions this very duty of associating forms otherwise unconnected. The stems, the branches, the style of growth, the longevity, the succulent fruit, the beautiful timber of the yew, link it at once, and with applause, to the foresters over which the cedar presides, and which are to oaks and beeches just what opulent islands are to the continents they lie adjacent to; the flowers, on the other hand, point a different way, and when we take that curious Japanese member of the yew-tree group called the *Salisburia*, the leaves are, on a great scale, the leaflets of the maiden-hair fern! No one examining the leaves of this remarkable tree could suppose otherwise than that they belonged to a fern; no one, looking at the substantial woody boughs, could have a moment's doubt that the tree conformed, so far, with the oak and walnut! The flowers of the yew itself are inconspicuous in the extreme. They come out early in spring, usually about March, and are so much hidden by the foliage as to be overlooked by any except the curious interrogator. They are difficult, moreover, of dissection, and the two sexes, male and female, are produced upon different trees. Hence it is only upon certain individuals, or those which develope female flowers, that the characteristic red berries are to be discovered. In structure these pretty fruits are not very unlike the acorn of the oak, only that instead of a hard and woody cup, the

receptacle is succulent and bright red. That famous fruit of Australia which is described by lovers of the marvellous and by the ignorant as "a cherry with its stone upon the outside," is very nearly the same thing as the yew-tree berry, only produced by a different tree. Botanists call it *Exocarpus*.

The slow growth of the yew, being a part of its life-history, belongs, like the flowers, to the botanical idea of the plant. To this is chiefly owing the hardness and the smoothness of the wood, which for delicacy and beauty of colouring is also excelled by few, the box alone, perhaps, presenting a surface of greater evenness and polish. Yew is the most esteemed of all our native woods for high-class turnery-work and for inlaying. It has the recommendation also of being rarely or never attacked by insects, guarded, as it were, like sandal-wood, by some native objectionableness. Sections, both horizontal and vertical, constitute truly beautiful objects for the parlour-museum, and form an excellent nucleus for a collection of such things. When so much time is devoted to "scrap-book" making and to stamp-collecting, useful up to a certain point as such pastimes may be, it seems a pity that as much leisure and activity should not be given to collections of wood-sections, which endure for ever, are beautiful and varied as seashells, and cost little more than the trouble of polishing. In bygone times the wood of the yew-tree was famous among archers, and it is curious to note that no less than three kings of this country have lost their lives through its instrumentality. First, the ill-fated Harold, at the battle of Hastings; then, William Rufus, in the New Forest; thirdly, Richard Cœur de Lion, at Limoges. The battles of Creçy, Poictiers, and Agincourt, were won through the energy of the yew-tree bowmen, and perhaps the milder archery of the present day would be more successful were the competitors to fall back upon the ancient material of their thrice-ancient instrument. The rings indicating age are in general very plainly seen in the yew, and form a striking illustration of the marvellous antiquity the tree is witness to. We often hear of "railway-time" and of "sidereal time;" the yew-tree helps to enforce upon us the grandeur of the idea of "tree-time." The vast age attained by individuals is accompanied, as would be looked for, by commensurate bulk and girth. In the graveyard attached to Bucklaw church, about a mile from Dover, there is, or was until recently, a yew with a trunk of no less than 24 feet in circumference. In Tisbury churchyard, Dorsetshire, there is another, now quite hollow, with an entrance gate on one side, and measuring 37 feet in circumference; while in the churchyard

of Fortingal, Perthshire, stand the remains of one which before the trunk fell in, and it became reduced to its present condition of little more than shell, measured round about the incredible number of 56 feet. One of the most picturesque of our ancient yews ornaments the churchyard of Darley Dale, Derbyshire.

No mention of the yew is made in Scripture, though there is reason to believe that it anciently grew upon the mountains of Lebanon, if not there still, since the tree extends far into central Asia. The Hebrew word *eres*, translated "cedar" in the authorised version, would seem to have been, like many other botanical terms occurring in holy writ, of a wide and general sense, including not only the genuine cedar, *Cedrus Libani*, but other species of the conifers suitable for building purposes, and likewise the yew. Among the relics discovered at Nineveh it is said that there are fragments of yew-tree wood, declared to be such by the peculiar structure of the fibre, as seen under the microscope. Truly does this marvellous instrument "cast light into the graves of Time." Virgil uses the name *pinus*, in one place at least, to signify timber-trees in general; and the frugality practised by the ancients in regard to the names of flowers and fruits would seem to give additional weight to the opinion. Scarcely a dozen flowers are mentioned by the ancient poets, including those of the Holy Land. The rose, the lily, the violet, are spoken of; but in all these, and in all the rest, the same kind of collective idea seems to be held. When we read of the yew in the classical poets, it is in the same spirit of dread and disrelish that belongs to modern ones. Ovid, for example, selects this tree to mark the place of descent into Tartarus—"Dismal yew shades the deep declining way that, through labyrinths of shade and horror, leads to Tartarus; languid Styx exhaling continual clouds."

THE MAPLE AND THE SYCAMORE.

JUST as men have their periods of worldly success, or of public honour, or of fame in art or in literature, at very various ages (showing that there is no necessary connection between the number of birthdays and the hour of triumph), so is it with the special glory or beauty of trees, considered in relation to their annual history: some, that is to say, are most charming at the time of their earliest leaf, the beech to wit; others look best when the foliage is mature; others when they are in blossom; others, again, when the fruit is ripe. The maple and the sycamore belong to a section which appeals to us most powerfully when the flowering is over, and the seed-vessels, fully formed, but still only incipient, begin to display themselves among the green. For though pretty in their way, and conspicuous from their abundance, at all events in the sycamore, the flowers of these two trees make a very trifling show; while in the figure of the leaves, in the ripened fruit, and even in the autumnal tinting of the former, there is nothing by which they would at once be singled out from the mass. Look at them, however, about the time that the laburnums have ceased their rain of gold, when the ferns are fast unrolling, and "the *first* rose of summer, sweet blooming alone," steps forth in the hedgerow like a planet in the evening sky, and whatever they were before, now they seem decked in every part with lively bloom. The colour and the gaiety are given by the clusters of rudimentary fruit, which in the maple is brownish-red, and in the sycamore pinky-yellow. Sometimes the display is delayed a little, but the fact remains the same that these two trees make more show during the period of gestation than during any other portion of their active life. By the peculiar form of the fruit they are at once distinguished also from every other kind of tree which grows, either wild or as a colonist, in Great Britain. Instead of some sort of nut or acorn, like that of the oak; instead of a cone, or a catkin, or a

berry, or anything of the apple form, these two produce a curious fruit, technically termed a double samara. Originally, so far as can be gathered from the use of the word by Columella, this term was applied to the fruit of the elm-tree. The application is now extended, all fruits of structure similar to that of the elm (the little seed-like fruits, for example, contained in the quasi-cone of the birch-tree) being classed as samaras. The main distinction in the maple and sycamore is the growing of the samaras in couples, instead of singly.

The samara is a one-celled and one-seeded, dry, and indehiscent fruit, provided with a long or broad membranous wing, which enables the wind to waft it far away. Hence the frequency with which trees producing fruits of this nature are found perched aloft upon old church towers and castle walls, where they compete for the monarchy with trees that have had their seeds conveyed thither by birds. While young, these wing-like parts are semi-translucent, and on being held between the eye and the light, show a beautiful net-work of veins. In old age, when beginning to dry up, they become elegantly reticulated, and in the depth of winter it is not uncommon to find them reduced to the condition of

Double Samara of Sycamore.

skeletons. Capital toys are they, too, for children. A properly-ripened samara of the common sycamore (easily known to be so by the roundness and solidity of the seed at the end), thrown up into the air, spins and gyrates during its descent to the ground with a rapidity that baffles the attempt to follow. It seems some queer insect in circular and downward flight; and when many are thrown up at once, the busy wheeling becomes quite an entertainment. The seeds of the conifers, when provided with the usual wing, similarly circle downwards. A beautiful and familiar natural law is, of course, the explanation of this curious spinning. At present we care to notice it only as an illustration of the pretty charities with which nature abounds, the child having its simple plaything provided, just as the philosopher has noble ideas suggested, and the pious man happy reflections. Few would suppose, until they come to be reckoned up, how many of these little playthings our boys and girls manage to find. The round, white head of the

dandelion, from which we blew the little ships into the aërial sea, reckoning, as they sailed away, what the sun-dial was never asked,—this is but one of a thousand toys that at the same moment are miracles of beauty, inside as well as outside. Well may we say "inside," in respect of the sycamore seeds, for these, if carefully cut open when quite or nearly ripe, present one of the prettiest spectacles in the world. Lined with the softest and whitest silk, in the centre lies, doubled up, the rudiment of the future tree; not a simple mass of albuminous kernel, as in the nut, but a couple of perfectly-formed green leaves, resembling little strips of green ribbon, so folded and involved that to separate them without fracture is a matter of some difficulty. The hinge-like point of union is the actual embryo; these two delicate green thongs are the cotyledons or "seed-leaves," which parts, in the seed of a plant, occupy the place and fulfil the purpose of the mother's bosom with regard to her infant. Charged with exquisitely tender food, as soon as the embryo awakes to active life, these pretty cotyledons become the main source of its nourishment, and upon these it depends until the growth of the root and ascending plumule enables it to forage in the earth and atmosphere.

The celebrated Genevese naturalist, Charles Bonnet, was the first to point out this beautiful and expressive analogy; to-day, it is recognised universally that the cotyledons of the seed are the vegetable mammæ. So close and striking at every point is the agreement of the idea of the plant with that of human nature! The question, in truth, is not so much what may be the *likeness* between man and the trees, but what is the *difference* between them! How hard even to speak of a tree except in terms first framed to denote the members of our own bodies! The main pillar is the "trunk;" the branches are the "arms;" in the foliage we have, poetically, the "tresses;" the sap-vessels are the "veins;" and in the end, when a name is wanted for the organs of the kindliest office of all, because in charity so sweet, see how soon and accurately by transference from woman! Unable, from the nature of its organisation, to feed its offspring immediately from its own body, as animals do, the plant bestows on every one of its progeny a couple of these pretty prefigurements of the mother's bosom; and however far the wind may carry them away, whatever geographical accident may befall them, nevertheless, within the shell, as soon the latent life begins to stir, here are these delicate cotyledons ready to give suck. When, as happens in certain races of plants, the cotyledons are exceedingly minute, the deficiency is compensated by an abundant storage within

the shell of the seed, of the self-same kind of nutriment. The likeness of the foliage of a tree, especially when pendulous and waving, to hair, and particularly to ringlets, is the ground of many a beautiful phrase in the classic poets;—Ovid, for instance, in his "arboreas mulceat aura comas." Similar lines occur in many places in high-class English poetry, and will occur on the instant to every accomplished mind. These sycamore seeds vegetate with remarkable facility, and, from some circumstance not yet determined, a larger proportion than of any other tree grow up into the first stage of life that follows lactation. In the spring, for one of any other self-sown seedling tree, there may generally be observed a score of sycamores, illustrating in the most beautiful manner, as growth proceeds, the gradual development of the handsome leaf so characteristic of the species.

By this last-named organ, the leaf, the sycamore and the maple may alike be distinguished from almost every other British tree. While the

Leaf of Acer.

prevailing form is oval, and the ash and some others are pinnate, here, in the maple and sycamore, we have the shape termed fan-lobed or palmate, familiar in the leaf of the grape-vine. The leaf, that is to say, has about five great promontory-like projections, up to the point of every one of which runs an independent vein. The sycamore has the lobes *acute*, in the maple they are *obtuse*. In both trees, moreover, the leaves grow in pairs, whereby the sycamore is at once distinguished from that majestic exotic, the plane, in which they are disposed singly and alternately. There is no sort of relationship between the sycamore

and the plane. Hence is it so much the more regretful that a tree of such ancient fame, consecrated alike by tradition, poetry, and philosophy,—for they were planes which constituted the sacred groves and colonnades of the Academia,—should have had confounded with it one of pretensions so inferior. Not that the sycamore is an unworthy tree. The dimensions it attains are often truly grand, and standing alone upon the sward of a park, where its imposing oval outline can be well realized, it has qualities, in regard to the picturesque, excelled by none. We must never judge of trees from the deformed and stunted examples that occur in hedgerows and in suburban gardens, or even from those which occur in plantations, nor always even from foresters. Trees, to develope their princely or queenly nature, as the case may be, require space, the free circling around and through them of admiring and nourishing winds, plenty of sunlight, to be clean, and to be refreshed

English Maple, leaf and fruit.

by unsullied rain. Good timber may be yielded, likely enough, by trees unhappily placed as regards free growth, but the dignity of their figure, the repose of the outline, the sumptuous massing of the foliage of the masculine kinds, the graceful trail of those of feminine habit, these, and all other such qualities, are possible only to a life of freedom. Precisely the difference between a ship laid up in a dock-yard, and, glorious in her white sails, afar off upon the sea, "walking the waters like a thing of life," is that of a tree as ordinarily seen, and the same species when robed in its grand privileges, and fulfilling the destiny assigned to it in the beginning.

The maple, ordinarily seen only as a bushy mass in the hedgerow, attains, under congenial circumstances, the height of at least thirty feet;

the sycamore grows to be seventy or eighty feet high, and many examples are known with trunks of five or six feet in diameter. The age it is capable of attaining appears to be fully 200 years. While contrasting it with the exotic plane, it is right to say here that, although perfectly at home in this country, and often possessing all the semblance of an ancient Briton, the sycamore is also an exotic, having been introduced in the time of the later crusades, from some part of eastern Europe or western Asia, in which regions alone it is truly indigenous. The maple, on the other hand, is one of our veritable aborigines. Let it be added, as regards the samaras, that the two trees are distinguishable by a certain difference between these quite as readily as by the outline of their leaves. The samaras of the sycamore are so placed as to make a letter U, and resemble a pair of sword-blades, while in the maple they spread horizontally. Those of the former hang in racemes; those of the latter in little bunches of three or four.

Connected with the leaves of these two trees, there are one or two other circumstances deserving notice. In both, they are remarkably red when first developed, giving a faint idea of what Sir Emerson Tennent states to be the customary condition of things in the island of Ceylon. In that beautiful tropic island, he says, it is not *autumn* which is marked, as in England, by the assumption of rich colours by the trees, but spring; that which in our northern latitudes accompanies decline and decay, being there associated with the energy of youth and growth. We may readily understand it from contemplating, not alone the lively tints of the trees in question, but the brilliant tints of the young leaves of many Indian plants cultivated in our conservatories, the Dracænas, for example, which begin life in the most vivid and luxurious crimson. Another interesting fact is the peculiarly rapid expansion of the leaves, at all events in the sycamore. This comes of their being folded up, while in the bud, after the manner of a lady's fan when closed, and similarly, therefore, to those of the "lady's mantle,"—that pretty little occupant of our meadows and pastures, which holds dew in its plaits and angles. A few hours will often suffice to cover a sycamore tree with an apparently miraculous outburst of foliage;—buds in the early morning, in the evening a green vesture in every portion. The horse-chesnut, which has the leaves plaited while young, in a manner very similar, is the only tree of common occurrence which so soon changes winter into spring. Then there is the curious ornamenting of the leaves of the maple with little red pimples, which gives them often a very pretty appearance. Turn the leaf upside down, and you will discover

that every one of these pimples is in reality a little cell, the habitation of some creature still more minute, and having the entrance barricaded with tufts of delicate white hairs, very interesting to examine with the microscope. We admire the architectural grandeurs of a great city. How many millions of quiet little abodes are here, exquisitely beautiful in design and finish, which we never even see, or seeing, pass by with indifference and incuriousness! The sycamore, in its turn, is extremely liable, towards autumn, to have its leaves patched with great round spots of black. These have their origin in a curious parasitic plant of fungoid nature, and which has been named by the learned, *Rhytisma acerina.*

The October tinting varies considerably. While the sycamore presents no colour of interest, the maple turns to a deep, clear yellow, the more remarkable since in the sugar-maple of Canada and New Brunswick, the colour assumed before decay is an inexpressibly-brilliant

Sugar Maple.

red. The last-named tree is celebrated also for its copious supply of that delicious saccharine sap which, when subjected to certain processes, becomes "maple-sugar." A similarly-constituted sap exists more or less abundantly in all the species of Acer, but it is ordinarily too thin and watery to be used like that of the true sugar-maple. Another excellent product of these trees is the wood. Many species have been esteemed for this from time immemorial. The Romans were particularly fond of it, and in Virgil we have Evander represented sitting on a maple throne. A corky bark forms another curious feature of the common English maple; and as if this were not sufficient to give botanical mark to the tree, the flowers are of the curious nature called "polygamous;" some, that is to say, are bisexual, others are only male, others are only female. The pistil, when present, is very

elegantly formed, having the figure of a column, with two volutes at the summit, disposed after the manner of those in the Ionic style of architecture.

It may be useful to add that the sycamore-tree, above described, and which by botanists is named *Acer Pseudo-platanus*, is totally different from the sycomore of Scripture. How the name came to be extended to one so unlike is not known, or at least no explanation of it occurs in books. The sycomore of Scripture was a species of fig-tree, *Ficus sycomorus*. It grew abundantly in the valleys of Palestine; also in Egypt, and hence obtained the name of Pharaoh's fig. To this day it is cultivated about Cairo and elsewhere for the sake of its shade; but it is a tree of little value either for timber or fruit. In ancient Egypt, where there were few native timber-trees, inferior as it is to many others, a certain importance necessarily attached to it, and the wood was used, it is said, in the manufacture of mummy-cases. The fruit is insipid, but sweetish, and still used for food, but only by the poorer classes of the people. The sycamine-tree is different again. By this name is intended the common black or purple mulberry, which, as well as the white mulberry, on the leaves of which silkworms are fed, is said now to abound in Palestine, though it is doubtful if the trees were common there in the days of the prophets.

THE BIRCH AND THE ALDER.

It is curious that two trees of physiognomy so entirely different as the birch and the alder should nevertheless correspond closely in the minutiæ of botanical structure. Not that the instance is a solitary one, or without many parallels. What more unlike, for example, than the Pyrola and the heather—the former a delicate little herbaceous plant, the lily-of-the-valley of the seaside sand-hills; the heather a tough and wiry undershrub of wastes and mountain solitudes. At the close of an autumn evening the Pyrola (which often mingles with the grass-of-Parnassus) exhales an odour so powerful that by this alone may be found the beautiful white forests which come of its plenty, even did they not gleam in the distance like drifts of summer snow; and in this particular we get the first suggestion of a possible affinity with the heather-tribe, one of which, called *Clethra arborea*, seems surely to have been scented from the same fountain. Examined in the light, the individual blossoms show likeness again to those of the Clethra; the Clethra in turn discloses points of affinity with the heather; and at last we find that all these plants are but varied utterances of a single idea. The same may be said of the Parnassia and the golden-saxifrage; of clover and the sweet-pea; of the cinquefoil, the strawberry, and the rose. Where externals seem to betoken widest unlikeness, if not absolute isolation, presently, on asking of the innermost heart, there dawns upon us the sense of a most exquisite consanguinity. It is the old, old deathless fable of Proteus over again—the "transformation" scene which no pantomime can ever compete with.

While curious, accordingly, that the birch and alder should be so unlike in their intimate likeness, it is curious only in the same sense that a thousand different melodies are all delightful. The variety and the novelty are not the only charm; that which enchants is the native and inalienable sweetness and feeling, and which holds us as deeply when long familiar as in the beginning. It is a grand secret in the art of estimating things aright, that the best is not that which fascinates on the first view, but that which waxes lovelier the longer it abides

with us, or we with it. The "curious" things in nature are not, as some weakly imagine, the casualties, the anomalies, or the extremes, but those dear old ways which God has daily manifested ever since the morning-stars sang together, and which constitute a large portion of the alphabet through which, by reverent watching, we may gather insights into the Divine order and munificence. To the earnest seeker after truth, a cowslip is more precious than a twin-apple or a triple hazel-nut, strange vagaries as they are; the "common things" of the world will for ever keep the firmest hold upon human interest and human affections, just as domestic love, new and fragrant every morning, is better, and better esteemed, than the largess of a prince.

The character by which the birch and alder are brought together, is found in the fruit. While they correspond with the rest of the amentiferous class of forest-trees in producing their male flowers in catkins, they differ from all (except the feathery-seeded willows and poplars) and agree between themselves, in having the *female* flowers developed in catkins likewise. Generically, the alders are distinguished by their hard and woody fruit-catkins, the scales of which are persistent; while in the birches the scales fall asunder, crumbling, when ripe, beneath the pressure of the fingers, and liberating myriads of little flat and seed-like fruits, every one of which is provided with lateral wings. The fruits of the alders, on the other hand, are wingless. Besides this, in the alders many female catkins stand side by side, or at all events near together, the peduncle being branched; while in the birches, the female catkins are always solitary. Altogether, there are of these interesting trees some sixty or seventy species. They grow in the woods and upon the mountains of Europe, northern Asia, and the Himalayahs, extending to Peru and Columbia, and even into the antarctic regions, where, however, as in the extreme north, they become reduced to the condition of diminutive shrubs. Three species are indigenous to Great Britain, the common or silver Birch, the dwarf birch, and the common Alder. The first and last, like most of the race, are esteemed for their pictorial effect in landscape; the dwarf birch is interesting on account of its littleness, the leaves being no larger than silver pennies.* Alders prefer wet soil, whence they are frequent adjuncts of the stream and river-side; birches prefer ground that is dry, and hence become a great embellishment of declivities and hill-sides, as well known to all who have stood face to face

* Under special circumstances, the dwarf birch will reach the height of twenty feet, but it never becomes a tree in substance.

with the grandeurs of the Highlands. Here too, like the Osmunda, they often creep down to the edge of the loch.

The common or silver birch, *Betula alba*, is known even to the most incurious observer, being distinguished from every other tree by the shining and silvery whiteness of the bark; it is remarkable also for the extreme tenuity of its twigs, which in the variety called *pendula*, droop so elegantly, and give an air of such charming grace and modesty to the tree, combined with the expression of a tender and high-souled melancholy, that it has been well named the "lady of the woods." Certainly no tree familiar to the eye in northern temperate latitudes presents a spectacle more consummately soft and delicate. The mimosas and jacarandas of the tropics may rival it perhaps in lace-like transparency; and there are many glorious trees of silvered foliage, the *Heritiera* or looking-glass tree for example, which stand on a par with it as regards gloss, when illuminated by the sunshine. But take it all in all, even in the presence of these illustrious rivals from the tropics, to the birch, wherever it may be, will probably be awarded the foremost place in admiration. The marvellous beauty of the tree is, after all, seen better in winter than in summer. Not until the branches have denuded themselves, and the various denizens of the woodlands stand like the goddesses before Paris on Mount Ida, are the matchless symmetry and proportions, the whiteness and the queenly figure, brought out in their incomparable perfection. So viewing them, we cannot but feel how great an auxiliary in the promotion of human delight is this self-same winter, which, by thus constraining the woods to disrobe themselves, shows lines and attitudes of beauty which in summer are totally lost in the maze of foliage. Clothing, that makes so beautiful, how often is it the veil of a beauty still more transcending!

Induitur, formosa est: exuitur, ipsa forma!

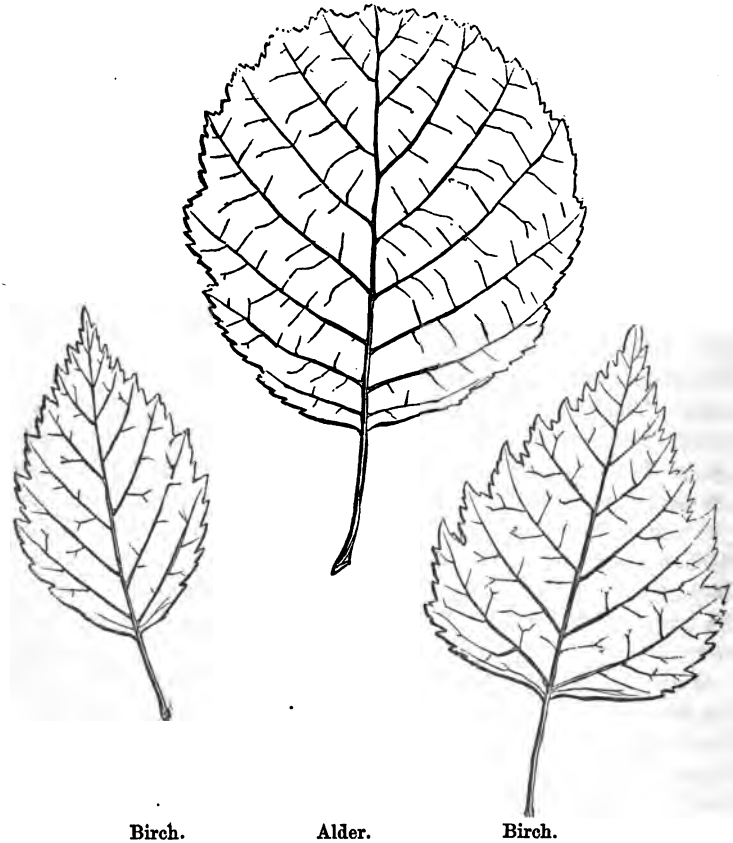
In the depth of winter, wherever birches have been liberally mingled with other trees in hillside plantations, the effect from the valley below is often unique. Far aloft, they lift up their white and shining fabric, not so much like the bleached skeletons some have compared them to, as after the manner of the constellations, speaking not of death but of life; not of darkness and desolation, but of that welcome lull in the too-vivid brightness which by day prevents the beholding, and gives to night a greater glory than belongs even to bright noon. Very beautiful, too, is the spectacle of the birches when, by reason of advancing autumn, they begin to reveal themselves in the recesses of the glen. Let us look for them. The sun shines bright and kindly, and glows in

rich red-brown on the bare pillars of the far-away Scotch firs. On every hand linger pretty relics of the summer, waifs of ivory meadow-sweet, overworn grasses, reluctant to wither, and foxglove bells in twos and threes where once were tall spires of nodding purple; the scabious and the golden-rod are holding festival; the ferns have unrolled their last leaflets of braid and spangle; the heather is fast uncovering its bosom to the bees; ah, see! there are berries, too, upon the *vitis idæa*, and beautiful round galls, like unripe cherries, upon the oak-leaves; and here, too, is the nipplewort, covered over with little green seed-baskets, and that goes on blossoming so cheerfully till Christmas. A fair and pleasing plant is this; the blossoms open only to the sunshine, yet it can sustain the rain and cold, and though the frost may blanch it, the form remains to the last. Now we wind along the shady pathway by the river, and list its sweet babble, that never ceases, winter or summer, marking too, as we go, the great stones that tell of the vehemence of the flood that so wasted the banks. Are the birches down here? I think not; we are too near the water's edge. Try among those beautiful green crowds upon the upper ridges, that seem asleep in the amber sunlight, with above them that glorious inheritance men call the sky, to-day blue as turquoise or forget-me-not, and islanded with molten silver. Surely we shall have them now! Ah, yes. Here spread those beautiful white arms; here sweep the leafy tresses; let the stream rejoice in its alders; the birch is for the upland, where it shall receive the first caresses of the morning, and be a brightness again when the stars twinkle, and Endymion is bathed in the light of his love.

The preference of the birch for a dry and airy situation, combined with the matchless delicacy of its figure, and its perfect penetrability by the light, well adapt it also for the central ornament of a lawn or large grass plot; and beautiful is it, in the calm of a summer's evening, to watch the bright round moon shine through it undimmed. In old trees the bark is apt to be very much broken up, and there come great patches of corrugated blackness, which serve, however, by the contrast, to make the silver that remains still more conspicuous. In other cases, these tarnished parts become green with the incipient growth of mosses. When covered up from the corroding influences of the atmosphere, the sheen of the bark seems indestructible, as shown, very curiously, when lumps of ancient birch-tree wood are dug out of peat-bogs. In Cheshire it happens frequently that when the peat-diggers penetrate to near the bottom, they come upon boughs and branches, with twigs innumerable, the interior or ligneous portion broken or decayed, but

the silvery vesture as white and perfect as when the tree was alive and thriving. The occurrence of these remains shows the birch to be one of our genuine aborigines. Where now the peat-bog lies in black and wet sterility (except for that brief period in high summer when it is enlivened by the silver tassels of the cotton-grass, or the golden spikes of the asphodel), once upon a time, and not so very remotely, probably not much more than 1,500 or 2,000 years ago, there was either marsh-land or forest, the floor of the latter being what is now the solid ground underneath the bog. The accumulation of water, and the gradual decay of the plants, laid the foundation of the bog; such trees as grew there would soon fall, and, with the gradual development of the bog-vegetation above, their remains would become buried where we now find them. There is another curious feature in the bark of the birch which deserves notice, namely, its aptitude to split into extremely thin laminæ or sheets. The highest development of this property is seen in one of the North American species, thence called *Betula papyracea*, or the "paper-birch." The layers of bark are so broad, so smooth, and so tough withal, that they form an admirable natural paper, and will allow of being written upon almost as easily as manufactured material, the only drawback being that the colour is light brown. The thicker portions of the bark of this singular tree are wrought by the native Indians of New Brunswick into various pretty toys, models of canoes, &c., as well as useful boxes, the former often ornamented with the quills of the American porcupine, and with the dyed hair of the moose-deer. One of the Himalayan species of birch, which men of science have agreed to call by its native name, *Betula Bhojpatra*, yields a similarly-laminated bark. The Sanscrit name of this bark, which is used for corresponding purposes, is *bhoorja*, and hence, in all likelihood, comes our word "birch." Such an etymology is strictly in accordance with that of "poplar," named above, and with several others, and indicates in a pleasing manner the migration from Central Asia westwards of the progenitors of the races of modern Europe. One other circumstance in the physiognomy of the birch is found very frequently to attract attention. It happens in this tree that there is often an arrested or impaired development of some portion of the buds. The consequence is that dense little bushes of short twigs are produced, concealed when the leaves are open, but in winter very conspicuous, resembling deserted crows' nests, and often occurring to the number of twenty or thirty in a single tree. In Scotland these odd developments are termed "witches' knots."

The *leaves* of the Birch are, as a rule, smaller than those of any other British tree in which the outline is of the same character. The "small-leaved elm" is the only other in which the dimensions are so limited. Yet upon very young trees, and more especially upon those luxuriant and vigorous side-shoots which start from the stumps of old trees that have been cut down, they are often of incredible size. The



Birch. Alder. Birch.

outline varies a good deal, changing from ovate to almost triangular; but there is always a sharp point, and the margins are always serrated. The catkins make their appearance very early in the season, the males starting from the extremities of the twigs, and growing in pairs, so as to give the idea of little V's, until fully expanded, which is simulta-

neously with the opening of the leaves, when they droop elegantly, and in vast profusion, a female catkin ordinarily accompanying every male, but so delicately small as almost to elude observation. The males are light brown, nearly two inches in length, and pendulous; the females are green, beautifully variegated with the crimson stigmas, and generally erect or nearly so. The age attained by the birch is of course not so considerable as that of trees of greater girth and robustness; the maximum stature would seem to be fifty or sixty feet. No mention of the tree is made in Scripture, nor does it appear to have attracted the notice of the classical poets, a fact explained perhaps by its comparatively rare occurrence in Southern Europe, where moreover it is found only in mountain fastnesses.

The Alder possesses none of the lady-like charms of the birch; as an invaluable ornament of river-scenery, it stands, however, quite on a level with the willow. No tree is more easily told; the broken, or torn, or cut inside of the stem and branches, though whitish when growing, very soon acquires a peculiar reddish colour, while the leaves are differently shaped from any other. Ordinarily the leaves of trees possess a point, more or less attenuated, owing to the onward push of the midrib. But in the alder the extremity of the leaf is absolutely pointless, and there is frequently a little tendency to a sinus or inward curve, resembling a bay on a coast-line. This gives the leaf an exceedingly broad and almost circular character. While young, the twigs and leaves are excessively clammy, whence the appropriate name *Alnus glutinosa.* The darkness of the green is another feature by which they may be recognised. That which is most noticeable in the tree is perhaps the beautiful aspect it holds when in flower. The catkins are very numerous, large, and of a deep rich brownish-red colour; —coming out long before the leaf-buds expand, they are displayed, like those of poplars, to the highest perfection, and gently moving to the breeze, seem like legions of caterpillars, a circumstance even more striking in some of the American kinds. Then in autumn we have a condition more pleasing yet. At this season, upon most individuals that have reached maturity, may be seen standing side by side, the representatives of three distinct and successive seasons of growth. Many of the black and emptied seed-catkins of the preceding year still cling to the twigs; abundance of the fat green seed-catkins of the *current* year, resembling clusters of little fir-cones, are within reach; and upon every branch there is promise of the season to come, that is to say, of the following spring, in the shape of rudimentary stamen-

catkins. Many trees give notice thus long beforehand of the activity contemplated for the year to follow, but it is in the alder alone that we have all these seasons, the past, the present, and the future, so beautifully associated. The phenomenon is one of so much the more interest from its reminding us once again how far back lie the *beginnings* of things! In April we say, behold the spring! But the alder was on the alert in March, in February, at Christmas! yea, long back in the old year, while the farewell-summer was in blossom, and the nuts were barely ripe! It forms a beautiful picture of the incessant recurrence of life upon death; before the aged have departed, the young are rising up to take their places.

The uses of the alder are not confined to its landscape effects and its significance. The leaves afford a brown dye, indicated by their rapidly changing to this colour when laid between papers to dry for the herbarium; and if we are to believe Virgil, it was of the wood that mankind constructed the first ships; at all events the first record of ship-building, after the time of Noah's ark, is that well-known line—

Tunc alnos primùm fluvii sensere cavatas.

The alder is mentioned also by Homer, under the name of *clethra* (now applied to the fragrant flowering-shrub mentioned above), but apparently not elsewhere. The wood has the valuable property of resisting the action of water, whence it is of great commercial value for the construction of piles for bridges, &c., as in the celebrated arch of the Rialto at Venice, which is said to owe its stability to the use of this alone. In France, great numbers of the wooden shoes there called "sabots" are also manufactured from the wood of the alder. In stature this tree rises to the height of fifty or sixty feet; in profile, when well grown, it is broad-headed, and somewhat oak-like.

THE ASH-TREE.

THE fame of the Ash-tree reaches back to the remotest antiquity, the wood having been used from time immemorial for spear-shafts and in the construction of other weapons of war, whence its well-known epithet—the "martial." Strange that such a purpose should be served by a tree the young branches of which are so brittle that they snap like sealing-wax. The delicate and feminine beauty of the ash-tree has also contributed to render it an object of frequent mention in literature, as when Virgil commends it as the most graceful of trees, in the often-quoted line—

"In fraxinus pulcherrima sylvis."

To English landscape the ash gives something of the character which in warm countries is supplied by the Acacia. This comes of its feathered leaves. The sunbeams filter perfectly through the foliage, and thus we receive at all times that agreeable sense of lightness and transparency which results from the sky being seen through a network of twig and verdure. In its stature too, the ash commends itself, well-grown individuals rising to the height of from eighty to a hundred feet. It has been said, that while we instinctively most love that which is little, admiration fastens chiefly upon the great: I think it will prove that we find our highest pleasure, after all, in contemplating that which strikes us more particularly as *lofty*, of course with the idea of symmetry combined. We give this meed of approval, as the spontaneous act of the soul, to the lily, to the aspiring palm, to the woman who rises higher than her companions. Not that in so doing we depreciate and disesteem the less, but that the tall takes the firmest and deepest hold. It is a great point to be always invited, by the stature of what surrounds us, to look *upwards;* or at all events, not to have our eyes habitually below the line of straight seeing. Our physical nature and organization are the better for such upward-looking; and a certain quiet satisfaction of spirit, felt, though inde-

finable, flows therefrom as a beautiful corollary. I have often thought that it may have pleased God to furnish and decorate the earth with tall trees in no slight measure for this identical and especial purpose. Timber, or something equivalent to it, might have been caused to exist after the manner of granite and marble:—fruits are produced, as it is, mainly by plants of inconsiderable height, so designed, no doubt, in order that their juicy largess shall be reached readily and pleasantly; all other gifts of vegetation it is quite easy to conceive as producible by herbaceous plants, and how copiously, let the gums, the resins, the dyes, the medicines which the latter yield so profusely, declare on their behalf. All this luxury and munificence is quite conceivable; yet no such provision would compensate the want of the green stateliness of the Trees. Shade, dignity, the poetry of the past, the delight of the present, the hope and inspiration of the future; all these things come of their glorious tallness; contemplating which, we are constrained to peer into the heavens. The two most admirable things in living nature, are mankind and the perennial trees; and the most perfect expression of the beautiful lies in that section of each respectively which we term the feminine, the latter always gaining from graceful stature. It is interesting to observe, at the same moment, that the ash, while so stately in its upright growth, is one of those trees in which the branches most readily assume the pendant position, thus becoming what are inconsiderately called "weeping,"—the true idea being rather that of long tresses, gracefully let down awhile, and calculated to remind us, not of mourning and the disconsolate, but rather of such incidents as when the Lady Godiva—

"Let fall the rippled ringlets to her knee."

Quite enough of calamity and sadness is inevitable to this temporal world to render it unnecessary for man to encourage thoughts and to impose names that shall make it seem more plentiful. The true idea of wisdom and of religion alike, is *cheerfulness;* and our pride and pleasure should be not only to cultivate unbroken gratitude to God for the multitudinous small mercies which we daily enjoy, and to cherish thankful sensations and ideas; but at the same time to endeavour to reflect these thoughts and feelings upon the face of nature, seeking and striving to behold gladness in all things, and to gather, in turn, from the pictures set forth in nature, new incitements to the pursuit of what is "lovely and of good report," new impulses to be energetic in right doing, new reason to forsake selfishness as being a thing utterly unprofitable. It is just

these results upon our hearts which constitute the true utility and the magnificence of the purpose of the world around us. If we ask what is the use of an immense proportion of the world's contents, meaning by "use," serviceableness for food, or for drink, or for clothing, there will come no answer. It was but a small part of the Divine munificence to provide for the satisfaction of *bodily* wants. It has pleased God to make innumerably more things fitted to do good to our souls than He has prepared of a kind suited to the body, only we think so little of it and so seldom. See how earnestly we thank Him at meal-times, and rightly so, for our meat, and peas and beans, for our milk, and sugar, and bread: do we not sometimes err in forgetting to thank Him for the Trees? I see, too, in these beautiful pendulous ones, the weeping-ash for example—so charming an ornament for a lawn, especially when not far from a silver birch—a sweet emblem of filial love. For though fed and allured in every possible way by the atmosphere and the sunshine overhead, see how the branches seem to love the spot from which that glorious canopy of verdure took its rise! Tall and illustrious as the tree

Ash.

is now, once it was a little seedling that might be crushed beneath the foot. So true is it that nature contains counterparts of everything that is delightful in the history of human life and the human affections—one form or another gives us a picture of everything that goes to make up home and love, faithfulness, and reverence, and solace.

Botanically, the ash-tree is distinguished from every other arborescent plant of our country (save and except the somewhat similar mountain-ash) by the peculiar form of the leaves. These, instead of consisting of a single blade, like those of the oak, the elm, or the beech, are composed of several pairs of leaflets, with an odd one at the

extremity. Technically, this form is called "pinnate" or feather-like. Whether the leaflets be articulated to the main stalk from the first, so as to constitute a truly compound leaf, is not quite clear. When they fall in autumn, the pieces certainly come asunder, just like those of the horse-chesnut and the Virginian-creeper; it is not unusual, on the other hand, to find young leaves in September, in which all the members are perfectly conjoined. The analogy of the jessamine, to which the ash-tree is nearly allied, would seem to indicate that they are *not* truly compound. The foliage is late in coming out,—with the exception of the mulberry, perhaps there is no tree in England which is habitually so much behind-hand; and late as the leaves appear, they are among the soonest to fade in the autumn. At the last-named period the ash assumes none of those brilliant hues which go to make up the grandeur of the woodland sunset. The leaves simply turn to a

Ash, with ripe fruit.

dull brownish-green, curling up as if scorched, and generally fall from the tree almost together, so that the branches become denuded in the course of one or two days. There is a useful bit of practical knowledge connected with this tardy appearance and early decay. The expansion of the leaves is a sign that the season is sufficiently advanced for greenhouse-plants to be trusted out of doors, the chance of frost being now reduced to a minimum; and by-and-bye, when the leaves begin to fall, it is a sign that the time is come for the restoration of them to their wonted shelter. So pleasing are the "signs of the times" afforded by plants; very many of which are almost as trustworthy as those drawn from astronomy.

Linnæus proposed to construct a calendar for the guide of the gardener and of the agriculturist, which would enable them, by observing at what periods certain trees come into leaf, or certain plants into blossom or fruit, to judge of the best times for sowing and planting, and also for gathering in the crops. It stands to reason that if after a few years' careful observation, a particular vegetable is found to succeed best when the seed is sown at the time some particular flower is in perfection, the recurrence of that period, the renewal of the perfection of that particular flower, will mark the time when the vegetable in question will again be most likely to be sown to advantage. In this beautiful concord we should in time secure a certain guide to healthy and prosperous operations, alike in field and garden, and should be able to calculate exactly when to look for the results. "If we found," for instance, says one who laboured hard to establish the fact, "that on sowing peas or other seed when the gooseberry-bush blossomed, they were ready for getting when the corn-marigold flowered, we might be pretty sure that every succeeding year the same uniformity would prevail, and by a little attention, the suitable times for all other such operations would be determined." It is not only in reference to garden and farm produce that such a calendar is at once possible and very interesting. So exact is the agreement between the period in the leafing and the flowering of trees and plants, that meeting with one kind, in some fair and pleasant field, we are assured that in the woodland we may now look with certainty for some other, each being an intimation of the arrival of its companion. That such a correspondence exists between the arrival and departure of migratory birds, and in their songs and nest-building; also in the hatching of certain insects, and the appearance of certain flowers, has long been known to naturalists, and many plants have been named from this beautiful harmony, the cuckoo-flower for instance, and probably the wake-robin. By and bye, when men learn to love nature as dearly as it deserves, these engaging truths will all be marshalled, and almanacks will deal not only with the changes of the moon, and the sun's rising and setting, but will become tables of the sweet harmonies that subsist between nature's calm and pleasant teachings and man's highest practical wisdom. It is impossible to enter nature at any point, but we come at once upon something useful to know; and the knowledge of which increases our happiness.

The particular place held by the ash in the sequence of arrivals of first leaves was established by the celebrated Benjamin Stillingfleet, who in Norfolk, in the year 1765, made out the following list of dates.

Of course they will vary with the season, a late spring driving all a little forwards, a forward one giving each a little earlier place, but the *relative* periods will probably be found to vary but slightly. It is with the leafing of trees as with the rise and sweet sheen of the constellations. Their places vary with the hour of the night, but they never alter their positions with regard to one another and to the pole-star. Omitting some of the less important trees and shrubs, the following is the list referred to:—

Honeysuckle	January	15	Wych-elm	April	12
Elder	March	11	Mountain-ash and Hornbeam	"	13
Birch	April	1	Apple	"	14
Bramble	"	3	White-poplar and Chesnut.	"	16
Plum, Apricot, and Peach, about	"	6	Oak	"	18
Filbert, Sallow, and Alder, about	"	7	Lime	"	19
Sycamore	"	9	Maple, Black-poplar, and Beech	"	21
Small-leaved Elm	"	10	Ash	"	22

Individual trees, of course, may be found anticipating the generality, just as in late autumn we may often observe individuals still green long after the great mass of their kind has become denuded. The principle, nevertheless, remains true, and all that is needed is for various observers in different places to note down the particulars for a few consecutive years, and then compare them. The least variation in the periods of events in nature available for the purpose of a calendar appears to be in the arrival of the migratory birds, and in the hatching of young rooks; the greatest, on the other hand, is in the blossoming of the turnip, the appearance of the yellow butterfly, and the singing of the loved and always welcome thrush.

The flowers of the ash-tree are the simplest known to Botany, at least as regards trees. They make their appearance long before the leaf-buds open, at first resembling clusters of ripe blackberries, and closely seated upon the twigs, towards the extremities. This rich and vinous colour is wholly given by the anthers, which while young are large and oval, and very densely packed. By degrees the mass becomes disintegrated, and the innumerable little blossoms compose a loose and branching panicle, not unlike that of the lilac-tree flowers. Between every couple of anthers lies, usually, a thin flat ovary, and this in due course, ripens into the well-known winglike body called the "ash-key." Some trees never produce fruit; the ash being one

of those plants which, without being structurally unisexual, after the manner of the Amentiferæ, such as the oak and the willow, are nevertheless, by non-development of some portion, unisexual very often in effect. In other words, some individuals produce perfect or bisexual flowers, while others are deficient in the pistilline or female portion. Hence it is that in winter, when the "keys" hang upon most individuals in those dense brown clusters which are so strikingly characteristic of this beautiful tree when leafless, certain other individuals are totally without them. They are generally at a considerable height, few being procurable by the hand lifted from below; and the same of course is the condition of the flowers, which, like those of poplars, often make us envy the birds, to whom no blossom is inaccessible. Many marks thus serve to isolate and distinguish the ash-tree, and if more were needed, we have them in the peculiar curving upwards of the extremities of the branches, at least when the tree is adult and growing old; in the flattened extremities of the twigs, and in the sooty-black buds, which at all seasons are very remarkable.

It is pleasing to observe for what very different situations the various figures of trees severally adapt themselves. The ash shows nowhere better than at the corner of a wood, where, by bringing off the heaviness of other trees, it forms, by reason of its lightness, a sort of transition from foliage to airy space. Hence, too, the exquisite effect of ash-trees when they have shot up, from wind-conveyed seeds, among ruins, such as those of roofless abbeys. The spectacle of a dismantled abbey is always full of power for the soul. Art seems fast verging into Nature; the walls arabesqued with ivy; every ledge and "coigne of vantage" occupied by the sweet azure of the harebell, grasses, or yellow hawkweeds; the lines of massive pedestals that mark where sprang the glorious pillars; the broken lacework of the spaces where once were windows; all these things are touching and impressive;—wonderful is it how all seem made more eloquent, when, disclosed here and there, through crevice and aperture, we get glimpses of the delicate foliage of the ash. No tree harmonises so well with dilapidation; the very hue seems a reflection of gray antiquity.

The Mountain-Ash.

The mountain-ash must not be associated with the genuine ash. The name is a very unfortunate one, referring simply to the likeness, slight as it really is, between the leaves. This likeness consists

however in nothing more than both being pinnate. The mountain-ash is a near relative of the apple and pear. Hence we find in its blossoms the rosaceous type of corolla, while the fruit corresponds, in a certain measure, with that of the orchard, though in dimensions little more than a berry. The charming spectacle which the flowers present in May places this tree in the first rank of ornamental ones; and although for two or three months afterwards it makes no show, the delay is more than compensated by September, when the rich vermilion clusters attract the most incurious.

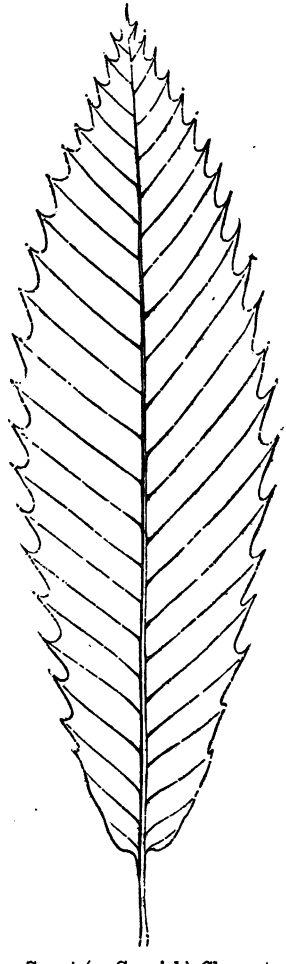
> "The mountain-ash
> No eye can overlook, when 'mid a grove
> Of yet unfaded trees she lifts her head,
> Deck'd with autumnal berries, that outshine
> Spring's richest blossoms."

These berries, popularly deemed poisonous, are perfectly free from hurtful properties. In the west and north of Scotland they are commonly converted into jelly for the breakfast-table; in Siberia likewise they are put to a similar use. When carefully prepared, this jelly has a beautiful tinge of violet in it.

The Chesnut.

Concerning the courtly chesnut it is merely necessary to speak of the differences which keep it distinct from the horse-chesnut, neither of these noble productions of nature being met with in Britain except as ornaments of the park or pleasure-ground. For although the sweet chesnut was introduced as far back as the time of the Romans, and has now become thoroughly at home (except as to the ripening of its fruit); it has not, like the elm and sycamore, taken its place in the wood and wilderness. Wherever met with, it is always obviously from the hand of the planter. As for the horse-chesnut, it appears to have been in England only some three centuries. Of the sweet chesnut, *Castanea vesca*, many magnificent examples occur in different parts, sufficiently venerable to give the perfect idea of "ancient Britons." They are still referable, however, to the origin spoken of. The differences in question are readily enumerated. In the sweet chesnut the leaves are simple and feather-veined: in the horse-chesnut they are septate. The flowers of the latter are produced in superb clusters, every corolla having its whiteness richly broken with patches of gold and crimson: those of the

sweet chesnut, on the other hand, are destitute of the brightness we connect with the idea of blossom; they are unisexual also, the males growing in slender spikes, the females in prickly knobs.



Sweet (or Spanish) Chesnut.

The purpose we had in view at the beginning is now completed; namely, the giving some account of the forest and other large and commanding trees ordinarily met with in Great Britain. There are many more trees of a smaller description, and all have abundance of interest-

ing and curious history and association, so that these chapters, were it desirable at the present time, might be trebled. Who, for instance, is unacquainted with the Elder, the blossoming of which is a sign that summer is matured, and the fruit of which shows, in its blackness, that summer is over? Then there are the wild pear, the wild apple, the wild medlar, and the wild cherry,—trees mostly loaded in spring with snowy bloom. After these we find the guelder-rose, the tamarisk, the box, and the spindle-tree; the Frangula, the buckthorn, and the dog-wood. The white-beam is remarkable for the snowy aspect of its foliage when stirred by the wind; the bag-nut for its chandeliers of pinky white in May, followed in autumn by round bags containing each a brilliantly-polished brown bead; the bird-cherry, *Prunus Padus*, completely covers itself with racemes of white flowers exhaling the odour of honey. Then there are the innumerable smaller kinds of willow and sallow; the holly, covered in winter with those glorious scarlet bracelets; and the hawthorn or "May," so deservedly famed in verse. The sloe, though rarely of the dimensions of a tree, has likewise many claims upon our interest. So has the berbery; so has the sweet-gale; so have those very curious trees—the sea-buckthorn and the juniper; so have the hazel, the hornbeam, the arbutus, and the wayfaring-tree.

After those which stand independently, there are whole tribes of roses and brambles, the sweet-briar, the honeysuckle, and the clematis, and longer-living, and farther reaching, and greener than any, the incomparable old ivy of the ruin and the aged tree. Another set, of still smaller dimensions, attracts us in the wild currants, the privet, and the whortle-berry; here, too, we find the broom and prickly furze, with their myriads of golden butterflies. In truth there is no absolute stopping-place. Trees are the maximum; between their majesty and the minimum there is so beautiful a descending scale of size and stature, that unless an arbitrary line be drawn, we cannot stop till we are abreast of the merest herb. Technically, even the wild thyme, that makes those lovely purple knolls on the grassy common, is a "shrub," for the branches, though only of the thickness of a needle, are woody and permanent, and the leaves endure through the winter.

INDEX.

Abele, 58, 60.
Abbeys, Ruins of, 91.
Acacia, 46.
Acanthus, 51.
Acer, 72, 76.
Aconite nectaries, 53.
Alder-tree, 77.
Alnus glutinosa, 83.
Amber, 26.
Amentiferæ, 55.
Anomodon curtipendulum, 15.
"Apple-of-Sodom," 11.
Archery, 67.
Arethusa, Fable of, 60.
Ash-tree, 85.
Aspen, 58, 61.
Australian-cherry, 67.
Autumnal foliage, 35.

Basket, a Celtic word, 62.
Bass or Bast, 47.
Beech-tree, 24, 29—36.
Bees, 52, 53.
Begonia, 50.
Betula alba, 79.
Betula papyracea, 81.
Bignonia echinata, 23.
Birch-tree, 77.
Birds, 9, 10.
Bonnet, Charles, 71.
Borrowdale, 20.
Botanical Geography, 19, 37.
Botany, True idea of, 8.
Bracken, 17.

Calypso, Island of, 51.
Camellia, 38.
Canada-balsam, 26.
Castonea vesca, 92.
Cathedrals, 29, 39.
Catkins, 55.
Cedar, 27, 68.
Ceylon, 74.
Chatsworth, 6, 48.
Chesnut, 92.
Clematis, 25.
Clethra, 77.
Coleridge, quoted, 33.
Common things, 78.
Cones, 21.
Conifers, 23.
Cotyledons, 71.
Cowper, quoted, 51.
Creosote, 26.

Daffodil 53.
Darley Dale, 68.
Dartmoor, 15.
Deserts, 49.
Development, Importance of watching, 49.
Dido, Queen, 59.
Diœcious trees, 55.
Dionæa, 56.
Dracænas, 74.
Druids, 14.
Dryads' cup, 16.
Dryopteris, 16.

Echoes in nature, 35.
Elder, 94.
Elm-tree, 37.
Endogens, 5.
England the Exhibition of the world, 6.
" the world's Flower-show, 39.
Epimedium, 50.
Epiphytes, 13.
Exocarpus, 67.
Exogens, 3.

Feminine trees, 46.
Ficus religiosa, 62.
Filix-fœmina, 45.
Filix-mas, 45.
Fir-cones, 23.
Fir-tree, 19, 23.
Fountains Abbey, 65.
Fries, 16.
Fruit, Botanical use of the word, 4.
Furness Abbey, 91.

Galls, 11.
Godiva, Lady, 86.
Goethe, quoted, 63.
Gopher-wood, 27.
Grass-of-Parnassus, 49, 53.
Gum, 33.
Gymnostachyum Cumingianum, 38.

Hardcastle Crags, 80.
Heritiera, 79.
Homer, quoted, 6.

Honey, 52.
Honey-cups, 52.
Horse-chesnut, 92.
Human frame in plants, 34.
Hydnum coralloides, 36.

Insect-life, 10.
Ivy, 13, 42, 94.

Kensington Gardens, 39.

Lady's-mantle, 20, 74.
Lebanon, 27.
Lime-tree, 45.
Limes, 47.
Linden, 47.
Lofty things, 85.
Lombardy-poplar, 58.
Loranthus Europæus, 14,
Lotus-tree, 16.

Mandeville, Sir John, 43.
Maple, 69.
Maple-sugar, 75.
Martial, quoted, 63.
Masculine trees, 46.
Microscope, The, 21.
Milton, quoted, 53.
Mistletoe, 14, 25, 53.
Monœcious trees, 55.
Mosses, 14.
Mountain-ash, 91,
Mulberry-tree, 24, 58.

Narcissus, 53.
Naturalists' Calendar, 89.
Nectaries, 53.
Nepenthes, 56.
Nineveh, 68.
Nipplewort, 80.

Oak, 6.
" apples, 10.
" fern, 16.
" spangles, 12.
Œnone, 30.
Ophelia, 60.
Osier, 62.
Oulton Park, 47.
Ovid, quoted, 30, 68, 72.
Oxalis, 38.

Palm-trees, 5, 19.
Palm-willow, 63.
Pan, 35.
Paper-birch, 81.
Parasitic plants, 13.
Peat-bogs, 80.
Perules, 82.
Peziza coccinea, 16.
Pine-tree, 19.
Pine-woods, 25.
Phaeton, 59.
Poetry, 9.
Poplar, 55.
Potentilla Anserina, 35.
Prunus Padus, 94.
Pteris Aquilina, 17.
Pyrola, 77.

Quercus pedunculata, 6.
" sessiliflora, 6.

Redland Court, 39.
Rhytisma Acerina, 75.
Rooks, 39.
Rosalind, 30, 63.

Safeguards of nature, 48.
Salisburia, 66.
Salix, 60—63.
Samara, 70.
Schleiden, quoted, 28.
Scotch pine, 24,
Shakspere, quoted, 59.
Shapes of leaves, 33.
Sycamore, 69.

Teil-tree, 48.
Theocritus, quoted, 26.
Tilia, 46.
Trees, Age of, 17.
" Antiquity of, 18, 27.
" Grandeur of, 86.
" Pictorial qualities of, 2.
" Economic uses of, 2.
" Associations of, 30, 59, 65.
" Masculine and feminine, 46.
" Sanitary value of, 1.
" Language of, 3.
" Influence of, 3.
" Growth of, 4,

Vernation of leaves, 82.
Vignettes, 42.
Virgil, quoted, 51, 53, 84.

Willow, 55.
Wistman's Wood, 15.
Woodpecker, 36.
Wood-sections, 67.
Wych-elm, 43.

Yew-tree, 64.

CAVE and SEVER, Printers, Hunt's Bank, Manchester.

WORKS BY LEO H. GRINDON,

PUBLISHED BY

F. PITMAN, 20, PATERNOSTER ROW, LONDON, E.C.

Third edition, revised, demy 8vo, extra cloth, price 6s. 6d.; half-morocco, 12s.; morocco, 15s.

Life: its Nature, Varieties, and Phenomena.

"Mr. Grindon is evidently a thinker of great originality. . . . Right nobly does he discourse on the crowded mysteries and many-coloured phenomena of existence. . . . The work abounds with striking remarks. It contains some healthy reasoning on practical questions, such as education, diet, the due enjoyment of life, and others of general importance."—*British Quarterly Review.*

"To those who delight in the exercise of their intellectual powers, these very thoughtful and beautifully-written reflections will be a welcome boon, and the source long afterwards, we may rest assured, of many fruitful meditations and pleasant memories."—*Sun.*

Extra cloth, price 12s.

BRITISH AND GARDEN BOTANY:

Consisting of descriptions of the Flowering-plants, Ferns, and Trees indigenous to Great Britain, with notices of all Plants commonly cultivated in this country for use and ornament; preceded by an Introduction to Structural and Physiological Botany, and illustrated with 232 engravings of Flowers, &c.

Stiff cover, price 1s. 6d.; cloth, 2s. 6d.

A Manual of British and Foreign Plants:

Consisting of the Latin and English Names of those likely to come before the Botanical Student; with other useful information.

Second edition, foolscap 8vo, extra cloth, price 1s. 6d.

THE LITTLE THINGS OF NATURE.

New and revised edition.

"For use in a series of fireside readings in a well-ordered household, and as a stimulus and guide to interesting conversation afterwards, they are admirable."—*Weekly Review.*

"Far more relishable than the most imaginative novels."—*Norfolk News.*

"It has seldom been our lot to read a book more beautifully written, and more deeply interesting, than the one before us."—*Christian News.*

LONDON:

F. PITMAN, 20, PATERNOSTER ROW, E.C.

3 2044 102 812 021

JUN 28 1925
DUE JUN 23 '33